FATIGUE BEHAVIOR OF CONVENTIONAL

AND

RUBBERIZED ASPHALT MIXES

A

THESIS

Presented to the Faculty

of the University of Alaska Fairbanks

in Partial Fulfillment of the Requirements

for the Degree of

DOCTOR OF PHILOSOPHY

By

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May 1999

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ABSTRACT

One of the main distress modes of flexible pavements is the fatigue cracking of the asphalt concrete surface layer. The addition of crumb-rubber modifier (CRM), obtained from scrap tires, to asphalt-aggregate mixtures has shown promise in enhancing their fatigue behavior.
In this study, conventional unmodified and CRM modified asphalt-aggregate mixtures are evaluated in terms of their fatigue behavior. Controlled-strain flexural beam fatigue tests are conducted in the laboratory over a wide range of temperatures. Experimental results are compared in terms of flexural, tensile and compressive stiffnesses, phase angle, fatigue life and cumulative dissipated energy. Results showed that CRM mixes are more flexible than unmodified mixes, and that mix fatigue resistance is enhanced by the addition of CRM.

Furthermore, a method of converting controlled-strain test data into equivalent controlled-stress behavior is presented. Experimental results revealed the existence of two types of controlled-strain stiffness-ratio variations. For each type of variation, an equivalent controlled-stress stiffness-ratio variation with cycles is derived. Using the predicted variations, fatigue lives for both modes of loading are determined. Predictions showed that, at a given temperature, controlled-stress mode of loading yields, as expected, shorter fatigue lives than its controlled-strain counterpart. An implicit validation of the proposed conversions revealed that fatigue equation parameters K and n for the different mixes fit within the range of values obtained from the literature for controlled-stress conditions.

In addition, a fatigue life model, applicable to the haversine pattern of loading used in this study, is presented. The model takes into account the cumulative dissipated energy to failure, mode-of-loading, and initial phase angle, strain and stiffness of the mix. Analogy with the traditional strain-based fatigue equation revealed that K is a

temperature-dependent parameter, whereas n and m are independent of mix temperature. A decrease in K is associated with an increase in temperature.

The newly developed model is then used to predict fatigue lives of conventional and CRM mixes in typical pavement structures. For this purpose, a finite element-based mechanistic analysis is used. Results revealed the enhanced fatigue resistance of CRM mixes in comparison to unmodified conventional mixes.

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ACKNOWLEDGMENTS

The author wishes to thank his advisor Professor Lutfi Raad for his support and guidance throughout this research. Special thanks are also extended to Professors Leroy Hulsey, Mohamed Succarieh, Jonah Lee and Gary Gislason for serving on the thesis committee and for their valuable comments and suggestions.

This work would not have been possible without the help, support and encouragement of George Minassian, Saber Ebadpour, Steve Brunanski, Norma Haubenstock, Howard Fruhwirth and Yuan Xiaolin. The author is also grateful to Rick Briggs, Matt Stone, Bob Hansen, and Tingang Zhang for their help during the testing phase of the study.

Financial assistance from the Civil engineering department and the Transportation Research Center at the University of Alaska Fairbanks provided invaluable support throughout the author's studies.

This work was made possible in part by funding from Manhole Adjusting Inc. and Alaska Department of Transportation and Public Facilities. The Arctic Region Supercomputer Center provided great computing resources to complete part of this study. All this help and support is greatly appreciated.

Finally, the author thanks his family for its patience, support and understanding throughout the years.

CHAPTER ONE

INTRODUCTION

1.1 Problem Definition

The main function of pavements in a transportation system is to provide a safe, economic and comfortable route for moving people and goods. With time, asphalt concrete pavements, also known as flexible pavements, are subject to different types of distress. One of the primary modes of distress is the load-associated fatigue cracking of the asphalt concrete layer, which is the result of repeated application of traffic-induced stresses. Extensive fatigue cracking reduces pavement life, requiring frequent rehabilitation and maintenance activities to restore the pavement to its initial safe and efficient conditions. Extending pavement life by eliminating or reducing fatigue cracking may bring significant savings and benefits to public agencies and roadway users. Public agencies can benefit from reduced maintenance and rehabilitation costs. The traveling public may save time and money because of less frequent accidents, work zones and traffic delays associated with road maintenance activities. Pavement engineers, in their quest to design and build long-lasting pavements, can select materials more resistant to cracking, which may extend pavement life and reduce rehabilitation costs.

Flexible pavements exhibit traffic-induced fatigue failure in the form of longitudinal cracking in the wheel paths, and a pattern of "alligator" or block cracking in the advanced stages of the distress. This causes a reduction in ride quality and allows deleterious materials to enter the pavement structure. Water infiltrating the underlying base materials will be responsible for loss of foundation support, uplift of pavement due to frost heave, and depressions due to pumping of fines. Surface depressions due to localized thawing of base layers may occur due to the intrusion of deicing agents. Air, entering through cracks, can accelerate the aging and stiffening of the binder. Consequently, raveling and disintegration of the asphalt concrete material will be accelerated at the sites of these cracks.

All of the above factors will result in an increased rate of pavement deterioration. Pavement engineers should select materials to produce asphalt mixes resistant to fatigue cracking. Several field and laboratory studies and observations have suggested that the incorporation of additives and modifiers in binders and asphalt-aggregate mixtures improves their performance. In particular, the addition of crumb-rubber modifier (CRM), obtained from scrap tires, to asphalt-aggregate mixtures has shown promise in enhancing their fatigue behavior. This research will study the fatigue behavior of some commonly used CRM asphalt mixes in comparison to conventional unmodified mixes.

In the United States, it is estimated that each year about 250 million tires are added to the billions of discarded tires already burdening landfills and illegal dumps across the nation (1). About 17 % of the tires discarded each year are reused in energy production, whole tire application (erosion control, breakwaters, highway crash barriers), and processed tire products. This percentage of recycled scrap tires can be increased by the use of CRM in asphalt-aggregate mixes. If this research shows that CRM mixes outperform conventional asphalt concrete, then the potential benefits of adding CRM to mixes are twofold: reduction of fatigue cracking and alleviation of landfills from a critical solid waste problem.

1.2 Crumb-Rubber Modifier Literature Review

In this section, a review of the reuse of scrap tires in paving applications is presented. In particular, legislation, obstacles and benefits of the use of crumb-rubber modifier (CRM), as well as literature on fatigue of CRM mixes are included.

1.2.1 Scrap Tire Problem

It is estimated that two to three billion used tires are currently laying in landfills, stockpiles and illegal dumps in the US (1). Each year, the nation generates about 250 million additional tires, approximately one tire per person. About 83 percent of this solid waste stream flows into stockpiles and landfills, threatening humans and their environment. Whole tires, disposed of in stockpiles, are breeding grounds for mosquitoes and rodents, which may infect humans. Due to the shape of a tire that acts as an ideal storage for oxygen, large fires have erupted in many stockpiles. Some of these lasted for months, producing noxious smokes and toxic runoff. The huge amounts of water required to extinguish a tire stockpile fire serve as a vehicle to spread tire oil and chemicals to surrounding areas. Tires, buried in landfills, have also the tendency to capture landfill gases within their voids and float to the surface, breaching the integrity of the landfill cap. All of the above contributed to the increased public attention to the solid waste problem created by used tires.

About 17 percent of the tires discarded each year are reused in three main areas: whole tire applications, energy production, and processed tire products. Whole tire applications include retaining walls, embankments, erosion control, culverts, and rockfall barriers. Due to its high energy content (2 gallons of oil per tire), about 26 million tires are consumed for energy production in industrial furnaces. One of the main processed tire products is the crumb-rubber modifier used in asphalt paving applications, which consumes 1 to 2 million tires per year. Specialized companies use different methods to convert discarded tires into usable CRM form. Methods include the crackermill process, ambient grinding/granulating, and cryogenic grinding.

1.2.2 Legislation

In an attempt to respond to the increased public attention and to reduce the solid waste problem created by used tires, many states have enacted laws and regulations to encourage the reuse of tires and to control the scrap tire management. However the most known law regarding used tires came from the federal government. In 1991, the US Congress passed the Intermodal Surface Transportation Efficiency Act (ISTEA) (2). Section 1038 of ISTEA mandated the use of recycled paving material and stipulated a minimum recycled rubber utilization requirement. Beginning in 1994, states were required to use, every year, a mandatory minimum percentage of recycled tire rubber in hot mix and/or spray-applied binder in all federally funded highway projects, or have money withheld for future projects. The minimum percentage was supposed to be 5 percent for 1994, increasing by 5 percent each year to a maximum of 20 percent in 1997 and each year thereafter. This minimum utilization requirement is considered to be a percentage of the total amount of asphalt mix laid in a particular state. ISTEA defines an asphalt pavement containing recycled rubber as a mixture of at least twenty pounds (9.1 kg) of CRM per ton of hot-mix, or at least three hundred pounds (136 kg) of CRM per ton of spray-applied binder.

The original ISTEA bill included a clause stating that the US Secretary of Transportation can waive the minimum utilization requirement if studies show that CRM mixes do not perform as adequately as conventional mixes, are not recyclable or present a health hazard for paving crews. Consequently, a surge of interest developed to study the performance, recyclability and the environmental impact of CRM mixes. Many states started placing test sections and conducted laboratory research on CRM mixes. Some results showed improved performance while others were inconclusive or conflicting. To allow more time for study and research, Congress placed, through Transportation Appropriation Acts for FY1994 and FY1995, two one-year moratoriums delaying the implementation of the minimum utilization requirement till 1996. Finally, due to the concerns of some agencies and the lobbying efforts of the asphalt industry (3), the ISTEA mandate was repealed by the National Highway System Designation Act of 1995. The Act, however, provided funding for studies and research on CRM mix design and test sections, and the development of performance-based classification for CRM binders.

Once CRM mixes prove to be cost effective and the engineering community is convinced that they can be properly engineered, it is expected that more states will adopt these mixes and use them on a routine basis, as has been the case in California, Arizona and Florida (4).

1.2.3 CRM Technologies and Claimed Benefits

Prior to presenting information pertaining to fatigue characteristics of CRM mixes, it is essential to introduce the two technologies used in producing CRM mixes. In general, CRM is incorporated in a mix following one of two methods:

1- the *wet method* or *process* is any method that blends CRM with the asphalt cement prior to incorporating the binder in the asphalt paving project. In this case, the rubber particles absorb oil components of the asphalt and swell several times their original volume. This reaction results in stiffening of the asphalt cement. This wet process has been applied to crack and joint sealants, surface treatments and hot mix asphalt mixtures (1,5,6). In this latter case, the reacted binder (called *asphalt-rubber*) is mixed with the hot aggregate to produce a mix referred to as *asphalt-rubber concrete* (ARC) or *asphalt-rubber hot mix* (ARHM).

2- the *dry process* is any process that mixes the rubber with the aggregate before the mixture is charged with asphalt cement. The dry process is limited to hot mix asphalt applications, which are referred to as *rubber modified asphalt concrete* (RUMAC).

The first use of asphalt-rubber (wet process) dates back to the mid-sixties in Arizona (7). In the mid-seventies, asphalt-rubber was first used in hot-mix asphalt application. Since then, asphalt-rubber has been incorporated in dense, open, and gap-graded mixes (6). Both low and high concentrations of CRM have been used, depending on the specific performance characteristics required. For low CRM content, the asphalt-rubber is typically composed of the normal grade paving asphalt used in the area and a maximum of 5 percent CRM by binder weight. Higher CRM contents of 10 to 25 percent are used to provide a binder with increased performance characteristics. Typically, asphalts used are one to three grades softer than the normal grade for that application. For dense-graded ARC mixes, finer CRM particles (< No. 20 (0.85 mm)) are appropriate, while with open-graded mixes, larger particles (< No. 10 (2 mm)) can be used (6).

Gap-graded ARC mixes have also been used successfully, specially in Arizona and California (4). In a gap-graded aggregate, the gradation is coarsened to provide a greater amount of coarse aggregate contact and to increase the *voids in mineral aggregates* to permit increased binder contents. Coarsening of the gradation provides space for the CRM particles. Design binder content is chosen to satisfy 3 to 5 percent air voids and 20 percent minimum VMA. Typical design asphalt-rubber contents range between 6.5 to 9 percent (6).

The addition of CRM to an asphalt cement induces physical changes in the asphalt-rubber binder. These include reduction of temperature susceptibility (an increase in high temperature viscosity and a decrease in low temperature stiffness), improvement in aging resistance (due to the carbon black present in CRM, which is a known aging inhibitor), and increase in elastic characteristics.

Several studies have shown the benefits and performance improvements of asphalt-rubber concrete. Fatigue resistance was shown to improve when compared to a control mix (8,9,10,11,12,13). Low temperature cracking was substantially improved (12,14) due to the enhanced elastic properties of the binder. Reflective cracking was reduced (15) due to reduced stiffness and lower tensile stresses. Improvement in rutting resistance was shown in some studies (9,16), and refuted in others (6).

Based on field evaluation data, the performance of dense-graded ARC has been comparable to conventional dense-graded hot mix asphalt, while gap-graded ARC has shown improved performance over conventional rehabilitation strategies (17).

The initial cost of AR mixes has ranged between from 50 to 70 percent higher than conventional mixes (4). Agencies who have used this type of CRM mixes feel that they are obtaining added value with ARC. However, there are inadequate data to quantify the benefits (4). It is worth mentioning that the wet process is used exclusively in the three states (California, Arizona, Florida) known to use the largest tonnage of CRM mixes in the nation (4).

Although newer concepts using the dry process have been created (5), the first application of the dry process is called the PlusRide process. Alaska Department of Transportation has substantial background in developing PlusRide in the nation. PlusRide HMA is a proprietary RUMAC. First developed in Sweden in the 1960's, it was licensed in the United States in 1978 under the tradename PlusRide. The mix design was refined in the mid 1980's establishing the gap-graded mix now marketed as PlusRide II (18).

The PlusRide technology primarily uses CRM (3% by weight of mix) as a rubber aggregate, which is incorporated into a gap-graded aggregate prior to mixing with asphalt cement. The CRM used is mainly an ambient granulated (cubical in shape) crumb rubber passing the 1/4 in. (6.4 mm) sieve with the fraction passing the No.10 (2 mm) sieve supplemented with buffings or ground CRM. This latter fine fraction is believed to partially react with the asphalt cement to modify binder properties (19). The aggregate gradation used in PlusRide follows a narrow, gap-graded band to allow space for the CRM. The asphalt cement grade selected for PlusRide is the same grade as for conventional mixes in the project area. The asphalt content varies between 7.5 and 9.0 percent, which is higher than conventional mixes. The target air void content used in the mix design is 2 to 4 percent.

The field performance of PlusRide has been mixed. Several states reported premature raveling and pothole formation (17). This is mainly due to the fact that PlusRide is very sensitive to variations in aggregate and binder content as well as placement and compaction procedures (1). Provided it is properly designed and constructed, this mix is expected to perform comparably to conventional HMA (17). The initial construction cost of PlusRide has ranged from 50 to 100 percent higher than conventional mixes (5) due to the narrow gap-grading of the aggregate, the granulated blended CRM, a higher asphalt content and the required royalty fee.

Despite the mixed performance observed in the field, some laboratory studies have shown the advantages of using PlusRide. Fatigue life was increased (9,11) due to the elastomeric aggregates. Other studies indicated increased resistance to low temperature cracking (14,20). One Alaskan study (21) showed improved skid resistance and ice debonding because of the protruding rubber particles at the surface. While one study demonstrated similar resistance to rutting as conventional HMA (12), others reported poor performance compared to a control (9,22).

Despite the benefits associated with CRM mixes, there is still reluctance to the widespread use of these mixes. This stems primarily from the initial high cost of the product. Factors contributing to this higher cost include: increased asphalt content, elevated mixing and reaction temperatures (higher energy consumption), the additional cost of CRM, modification of production equipment and the contractor "fear factor". The lack of field performance data needed for life cycle cost estimations is another obstacle to the use of CRM mixes. Other non-economic obstacles to the increased use of these mixes include: the lack of national materials specifications, environmental concerns due to the hazardous compounds released when rubber reacts with asphalt, and concerns about the recyclability of pavements containing CRM mixes.

1.2.4 Fatigue of CRM Mixes

Very scarce information exists on the fatigue response of CRM mixes. The studies described below cover the fatigue behavior of CRM mixes prepared in the laboratory, by either the wet or dry methods.

Takallou et al. (23) conducted diametral (indirect tensile) controlled-strain fatigue testing on laboratory prepared rubber-modified asphalt concrete (RUMAC) specimens to study the influence of mix ingredients on fatigue behavior. Tests were performed at 10°C (50°F) and -6°C (21°F). The Marshall mix design method was used to obtain optimum binder contents at 2 percent air-void content. Mix variables considered in the study included aggregate gradation (gap- and dense-graded), rubber gradation (fine, medium and coarse), rubber content (2 and 3% by weight of aggregate), air-void content (2 and 4 percent), mixing temperature (190°C (375°F) and 218°C (425°F)), curing time (2 hours and none), and level of surcharge before sample extrusion (5-pound and none). Results showed that the ratio of fatigue lives of gap-graded and dense-graded CRM mixes to that of the control AC-5 mix ranged between 2 and 7. This study used diametral fatigue testing on as-compacted (non-cut) samples prepared by impact compaction (Marshall hammer). It is recommended, however, that laboratory samples be prepared by rolling compaction to best simulate field compaction, and be cut from larger samples. In addition, diametral fatigue test was found to be inferior to flexural fatigue tests in the sensitivity of its measurements to mix composition.

As part of a research study to predict the performance and cost-effectiveness of asphalt-rubber concrete (ARC) in airport pavements, Hoyt et al. (24) conducted controlled-stress third-point beam fatigue tests on conventional asphalt concrete and ARC mixes at -1, 20 and 40°C. The control mix was prepared with an AC-10 binder (4.8 percent asphalt, 3 percent air voids). The asphalt-rubber binder consisted of 77 percent AC-10 with 3 percent extender oil and 20 percent ground rubber. The binder content for the ARC was 4.73 percent yielding an air-void content of 7 percent. Results from the study showed longer fatigue lives for the ARC than for the control mix. The authors concluded that for climates with high and low temperatures, the additional cost of adding CRM to an asphalt binder appears to be justified by the predicted increase in life and decrease in life-cycle cost of the ARC.

Harvey (8) studied the influence of several mix variables on the fatigue behavior of a dense-graded asphalt-rubber concrete (ARC). Controlled-stress flexural beam tests were conducted at a single temperature of 20°C (68°F), and at a single stress level. A mechanically controlled pneumatic fatigue apparatus was used. Loading was applied in a square waveform (one stress level of 95 psi (655 kPa)) for 0.1 sec at a rate of 100 cycles/min. The asphalt-rubber binder used consisted of an AR-4000 asphalt and ground tire rubber (18 percent Atlos 1710 by weight of binder) passing No.16 (1.2 mm) sieve and retained on No.50 (0.3 mm) sieve. All mixes were prepared with 7 percent asphalt-rubber by weight of aggregate. The influence of the following variables on fatigue behavior was investigated:

- Aggregate type: two types of aggregates were used: a partly crushed alluvial gravel having a smooth surface texture (LA abrasion (ASTM C131) = 17 percent), and a completely crushed angular granite with a rough surface texture (LA abrasion = 36 percent).
- Fines content: a low (2.5 percent) and normal (5.5 percent) fines content (fraction finer than No. 200 (0.074 mm) sieve size) were used.
- Air-void content: specimens were compacted to a low (4 ± 0.5 percent) and high (8 ± 0.5 percent) air-void content.
- Compaction method: slabs were prepared by two methods: laboratory rolling wheel compaction and kneading compaction.
- Mixing viscosity: two levels of mixing viscosities (high and optimum) were used to prepare the asphalt-rubber/aggregate mixtures; i.e. two levels of mixing temperature were used : low (163°C (325°F)) and optimum (177°C (350°F)).
- Compaction viscosity: two levels of compaction viscosity (high and optimum) were used to compact the specimens after short-term aging; i.e. low (135°C (275°F)) and optimum (149°C (300°F)) temperatures were used.

A total of twenty ARC beams were tested. Statistical analysis and general linear modeling revealed that the variables significantly affecting the ARC fatigue life are:

- air-void content (TranAV),
- mixing viscosity (Vm),

- interaction of aggregate type and compaction viscosity (Ag*Vc),
- interaction of air-void content and compaction method (TransAV*Co), and
- interaction of compaction method and compaction viscosity (Co*Vc).

The general linear model for ARC fatigue life (N_f) was given as :

$$\log N_f = 4.895 - 0.416*\text{TransAV} + 0.409*\text{Vm} - 0.230*(\text{Ag}*\text{Vc}) + 0.274*(\text{TransAV}*\text{Co}) - 0.208*(\text{Co}*\text{Vc}) \qquad (R^2 = 0.854)$$

where, TransAV: (Air-void content - 6)/2 ; (-1 for 4% ; 1 for 8%)

Ag: -1 Gravel ; 1 Granite

Vm: -1 High mixing viscosity; 1 optimum mixing viscosity

Vc: -1 High compaction viscosity; 1 optimum compaction viscosity

Co: -1 Kneading; 1 Rolling Wheel

In addition, results showed that the ARC:

- had poor performance when not compacted to low air-void contents,
- had better performance when mixed and compacted at lower viscosities (i.e. higher (optimum) temperatures), and
- had better performance than a control mix.

Terrel et al. (9) conducted limited controlled-strain flexural fatigue tests at a single temperature, on laboratory produced beam specimens, using equipment and protocols developed under the Strategic Highway Research Program (SHRP). Mixes included PlusRide II base and surface mixes (7.5 percent AR-4000W asphalt), an ARHM-GG (8.0 percent asphalt-rubber binder with AR-2000 base asphalt) and a control mix (4.7 percent AR-4000W asphalt). Air voids ranged between 2 and 4 percent. Test results showed that both CRM mixes outperformed the control mix. At a strain level of 500×10^{-6}, the ratio of fatigue lives of PlusRide II base, PlusRide II surface and ARHM-GG, to that of the control mix were 45, 18 and 12, respectively.

In summary, the review showed that there are many shortcomings in the fatigue evaluation of CRM mixes. Some of the CRM mixes used in the studies above are not the commonly specified CRM mixes nowadays. Also, some of the test methods used are not the most recommended ones because of their lack of sensitivity to mix variables. In addition, limited strain, stress and/or temperature levels were used to characterize mix fatigue behavior. Also, impact or kneading compaction methods used to prepare test specimens in the laboratory failed to simulate field rolling-compaction. Therefore, it was felt that there is a need to collect field specimens to properly characterize mix fatigue behavior. In this study, this need was fulfilled by obtaining specimens from actual pavement sections and testing them over a wide range of strain and temperature levels.

1.3 Research Objectives

Based on the problem definition and limitations of the studies described above, the main objectives of this study were as follows:

1- To characterize the fatigue behavior of conventional and CRM mixes by conducting controlled-strain flexural fatigue tests on specimens obtained from actual pavements located in California and Alaska.

2- To develop regression equations relating mix properties to temperature, and to compare mix performance using strain-based and energy-based fatigue models.

3- To present a method of conversion of controlled-strain test data into equivalent controlled-stress fatigue behavior.

4- To propose a new fatigue life model applicable to the haversine pattern of loading to be used in this study.

5- To demonstrate the use of the newly developed model by applying it to an actual pavement section, and to compare fatigue lives of conventional and CRM surface mixes.

1.4 Scope of Work

The scope of this work encompasses the following:

1- Laboratory study: this part consists of collecting field slabs of conventional and CRM mixes from actual pavements, sawing these slabs into rectangular beam specimens and performing laboratory controlled-strain flexural tests over a wide range of temperature and strain levels.

2- Analysis of results: in this part, the laboratory-obtained test results are used to develop the following:
   a- Stiffness and phase angle variations with temperature,
   b- Strain-based fatigue life relationships,
   c- Cumulative dissipated energy to failure variations with fatigue life,
   d- A method of conversion of controlled-strain test data into controlled-stress behavior, and
   e- A new fatigue life model, applicable to the haversine pattern of loading used.

3- Applications: This part includes the use of the new model to an actual pavement structure to compare fatigue performance of conventional and CRM mixes.

1.5 Outline of Thesis

This thesis is divided into the following chapters:

Chapter one: This chapter defines the problem at hand, presents background information on the use of CRM in paving applications, enumerates research objectives, presents the scope of work, and outlines thesis contents.

Chapter two: Literature review pertaining to fatigue behavior of asphalt-aggregate mixes is presented. Factors affecting this behavior, time effects, shift factors, testing methods and prediction models are included.

Chapter three: This chapter describes the conventional and CRM mixes tested in this study, as well as the testing apparatus and procedure used to characterize their fatigue behavior.

Chapter four: Test results in terms of mix stiffness, phase angle, fatigue life and cumulative dissipated energy are presented and compared for the different mixes. Regression equations relating mix properties to test temperature are also presented.

Chapter five: A method of converting controlled-strain test data into controlled-stress behavior is proposed. This mode-of-loading conversion is applied to two types of stiffness-ratio variations. Controlled-stress fatigue-life equation parameters (K and n) are compared to those published in the literature.

Chapter six: A new fatigue life model, applicable to the haversine pattern of loading used in this study is presented. The influence of mix fatigue behavior and properties on model parameters (K, n and m) is explained.

Chapter seven: An application of the newly developed model is demonstrated for an actual pavement structure. Finite-element based mechanistic analysis is used to predict pavement response. Mix properties and predicted peak tensile strains are used in the new model to determine and compare fatigue life of conventional and CRM mixes. Limitations of the model are also included.

Chapter eight: The main findings of this study are summarized. Conclusions and recommendations for future research are also included.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter, a review of the state of knowledge in the fatigue behavior of asphalt-aggregate mixtures is presented. Factors affecting this behavior, time effects, shift factors, testing methods and prediction models are described. The literature review on the reuse of discarded tires in paving applications, in conjunction with the introduction to the problem of fatigue cracking of flexible pavements (presented in Chapter 1) defines the motivation behind this research. If the incorporation of CRM in mixes improves fatigue behavior, the benefits of this use are twofold: reduction of pavement fatigue cracking and alleviation of landfills from a problematic solid waste.

2.2 Fatigue of Asphalt-Aggregate Mixtures

Fatigue resistance of asphalt concrete (AC) is its ability to withstand repeated bending without fracture. Fatigue cracking of the AC layer is one of the main distress modes in flexible pavements. It is the result of repeated application of traffic-induced stresses. These fluctuating bending stresses, having a maximum value less than the tensile strength of the asphalt-bound material, eventually yield to the fracture of the AC layer. Cracking may initiate at either the top or bottom of the AC layer, depending on the relative stiffness of the pavement layers, pavement temperature profile and/or tire pressure distribution and magnitude. Flexible pavements exhibit traffic-induced fatigue failure in the form of longitudinal cracking in the wheel paths, and a pattern of "alligator" or block cracking in the advanced stages of the distress. This cracking may not constitute failure in the sense of reduced ability to serve traffic. It prevents the surface layer from protecting the underlying layers from the effects of traffic and water infiltration, thus resulting in an increased rate of pavement deterioration. Spalling and disintegration of the asphalt concrete material will also be accelerated at the sites of these cracks.

The laboratory fatigue performance of asphalt-aggregate mixtures is usually evaluated by performing repeated-load tests on specimens compacted in the laboratory or cut from in-situ pavements. Over the years, researchers have used various laboratory test methods and corresponding specimen shapes. Trapezoidal-shaped cantilever beam (25), simply supported third-point beam (26), center-point loading beam (27), cantilever beam with rotating bending (28), or cylindrical specimen (29) have been used in laboratory investigations. More recently, torsional fatigue tests were conducted on thinly sliced AC samples using a dynamic shear rheometer (30).

In 1987, the five-year Strategic Highway Research Program (SHRP) was launched. It included a $50-million research effort to develop performance-based tests and specifications for asphalt binders and AC mixes. SHRP Project A-003A, entitled "Performance related testing and measuring of asphalt-aggregate interactions and mixtures", was involved in evaluating the fatigue behavior of AC mixes. In its reports (31,32), this project's research team described the different fatigue test methods used by investigators over the years together with their advantages and disadvantages, and recommended the following test methods for further analysis:

- Flexural fatigue tests: third-point prismatic (beam) test, and trapezoidal cantilever.
- Tensile fatigue tests: diametral test, and uniaxial tension-compression test.
- Fracture mechanics approach: notched-beam (K, J, or C*-line integral).
- Tensile strength and stiffness: as surrogate for tensile fatigue effects.

After a pilot test program aimed at evaluating the above test methods, the team concluded (32) that flexural beam and cantilever tests are equivalent means for assessing the fatigue behavior of asphalt-aggregate mixtures. However, they selected the beam test for their extended test program because beam test measurements were more sensitive to mix variables than those of the cantilever test. The research described in this dissertation used the third-point flexural beam fatigue test method.

The laboratory fatigue response of asphalt-aggregate mixtures depends on the *mode-of-loading*, that is, the method by which stress and strain are permitted to vary during laboratory repetitive loading. In the controlled-stress mode of testing, the load or stress amplitude remains constant during testing. The strain or deflection of specimen increases gradually until failure occurs in the specimen. In the controlled-strain mode of testing, the deformation or strain amplitude is maintained constant during testing, whereas the stress or sample stiffness decreases (as damage accumulates) until it reaches a pre-selected percentage of its initial value.

For a given AC mix, controlled-strain and controlled-stress testing performed on replicate specimens may result in different fatigue lives. At low temperatures, differences in fatigue lives may not be significant. At higher temperatures, however, controlled-strain testing yields longer fatigue lives than controlled-stress testing. The ratio of fatigue lives may range between 2 and 3 (33). This difference between the two types of tests is associated with the rate of crack propagation being faster in the controlled-stress test, yielding shorter fatigue lives.

Another effect of mode-of-loading is that, under controlled-strain loading, a mix tested at a high temperature (low stiffness) will perform better (have longer life) than the same mix tested at a lower temperature (higher stiffness). Under controlled-stress loading, the reverse is true: the stiffer mix will perform better. Therefore, there were concerns that these test results may lead to different mix design considerations. Attempts were made, in the late sixties, to determine what mode-of-loading best simulates actual pavement (26,34). One approach used a parameter termed the "mode factor" (MF), defined as: MF = (A-B) / (A+B), where A is the percentage change in stress due to a stiffness decrease of C percent, B is the percentage change in strain due to a stiffness decrease of C percent, and C is an arbitrary but fixed reduction in stiffness resulting from the accumulation of fatigue damage under repetitive loading. The mode factor assumes a value of -1 for controlled-stress conditions and +1 for controlled-strain conditions. From the analysis of a number of pavement sections using multilayered elastic theory (26), the controlled-strain mode of loading was shown to be approached in thin surface layers whereas the controlled-stress mode is only approached in thick, stiff layers. In this context, surface layers less than 50 mm (2 in.) are defined as thin, whereas layers 150 mm (6 in.) or greater are defined as thick. Between these two thicknesses some intermediate mode of loading prevails. The effect of mix stiffness on fatigue life differs considerably for thin and thick AC layers. For thin layers, the mix stiffness does not affect the tensile strain in the layer significantly. Since controlled-strain mode of loading is applicable for thin layers, an increase in mix stiffness reduces fatigue life. In thick layers, the structural contribution of the layer becomes significant, reducing the tensile strain as the layer stiffness increases, thus improving fatigue life. On the other hand, the tensile strain in thin surfaces is relatively insensitive to the load applied, but very sensitive to the tire contact pressure. For thick layers, tensile strains are sensitive to load and relatively insensitive to tire pressures (35).

A clear conclusion from the material presented above is that thin AC layers have longer fatigue life if they are flexible, that is the material should have as low mix stiffness as possible, without adversely affecting mix stability and rutting potential. For thick layers, fatigue performance is improved as the stiffness of the layer is increased. However, the question remains whether a mix A, judged superior to a mix B based on laboratory tests under one mode of loading (controlled-strain, for instance), will also be superior based on results obtained with another mode of loading (controlled-stress). Tayebali et al. (33) evaluated the effects of mode of loading on the ranking of mixes by simulating in-situ pavements performance based on flexural beam controlled-strain and controlled-stress fatigue data. Results of the analysis showed that controlled-stress and controlled-strain testing yielded similar mix rankings.

Over the years, laboratory research has focused on mix variables affecting fatigue behavior of asphalt-aggregate mixtures. The latest most comprehensive study on fatigue of AC was conducted by SHRP researchers (32). The research effort was divided into two main programs. A pilot program selected the flexural beam test among several candidates, while an extended program used this test to study the influence of mix variables on fatigue behavior of asphalt-aggregate mixtures.

In general, test results have shown that, at a given temperature, any mix variable that increases mix stiffness will increase fatigue life in a controlled-stress test. The reverse is true for controlled-strain testing, where a reduction in fatigue life is associated with an increase in stiffness, except for an important mix variable, which is its air-void content. Even though a reduction in air-voids increases mix stiffness (for a given asphalt content), controlled-strain tests have shown that fatigue life increases as air-void content is reduced. Finn et al. (36) mentioned that fatigue life could be reduced by 30 to 40 percent for each 1 percent increase in air-void content.
Tests have also shown that an increase in asphalt content increases mix fatigue resistance (32). From a mix design standpoint, as much asphalt as possible should be incorporated in a mix, without adversely affecting stability requirements.

Laboratory tests have shown that fatigue resistance of AC is also sensitive to the type of asphalt binder (37). The shear loss modulus ($G'' = G^*.\sin\delta$) of the aged binder proved to be a good indicator of the relative laboratory fatigue resistance of otherwise identical mixes. This is why the performance-based Superpave binder specifications (38) included the shear loss modulus of the asphalt (G'') as a fundamental property related to the fatigue behavior of the binder. This parameter is obtained by conducting a dynamic shear rheometer test (39) on a pressure aging vessel-aged residue (40). To minimize fatigue cracking, a maximum value of 5000 kPa for the shear loss modulus is stipulated by the Superpave specification. However, there has been some concern (30,41,42,43) that this parameter does not correlate adequately with field fatigue performance data or that the parameter, by itself, is not a sufficient indicator of the fatigue performance of actual pavement structures. It is well known that the binder alone does not determine fatigue response in the pavement structure. Mix characteristics as well as the pavement structure itself and the environment within which it is located have a significant role in determining pavement performance.

Different types of aggregates (of the same gradation) were included in the SHRP study (32). Test revealed that aggregates have statistically significant effect on fatigue life as determined by controlled-stress and -strain beam tests. Using the same aggregates, the trapezoidal and diametral fatigue tests did not show any statistically significant effect on fatigue life. European research (44,45) found that the type of aggregate and gradation play a minor role compared to mix volumetrics. More recently, Sousa et al. (46) conducted strain-controlled flexural beam tests on mixes with nine different aggregate gradations but of the same source. Results showed that mixes with fine gradations (passing through or above the Superpave restricted zone) had better fatigue performance than mixes with gradations passing below the restricted zone (relatively coarser mixes). One of the mixes designed according to the Superpave volumetric procedure exhibited the worst fatigue performance among all mixes tested.

Frequency of load application in a fatigue test is another variable that affects a specimen's fatigue life. Research has shown (47) that load applications in the range of 3 to 30 cycles per minute had no effect on fatigue life, whereas frequencies between 30 and 100 cycles per minute significantly decreased fatigue life (48). Other research (49) showed that rest periods between successive loading cycles (i.e. pulsed loading) had a beneficial effect on fatigue performance both by increasing resistance to cracking and by reducing the rate of stiffness loss due to repeated loading. When compared with fatigue life under continuous sinusoidal cyclic loading, rest periods on the order of one second increased fatigue life by a factor of up to five. A comparison of fatigue performance under square, sinusoidal and triangular waveforms indicated the same significant differences, but these were small compared to the effects of rest periods (49).

In a pavement, a rest period occurs after the application of each load pulse. Therefore, a laboratory pulsed loading with rest periods is more representative of a pavement loading than the continuous sinusoidal loading without rest period. The rest period in the field is believed to contribute to the healing of the mix, hence extending its life. However, sinusoidal testing is quicker to complete in the laboratory, and yields shorter fatigue life. On the other hand, the rest period in laboratory tests is shorter than the rest periods observed in the field. Longer fatigue life is associated with a longer rest period. Therefore, this increased fatigue life in the field (attributable to healing) can be expressed by means of a shift factor for healing (50) as follows:

$$SF_h = 1 + a\,(t_r)^b \qquad (2.1)$$

where: t_r = rest period, seconds

a, b = the healing coefficient and exponent, respectively.

For the Superpave four climatic zones, a and b have been calibrated to the field from the analysis of pavement deflection data (moduli backcalculation) and from laboratory testing.

2.3 Fatigue Limiting Criteria

Three types of criteria have been used to relate specimen response during a fatigue test to the number of load repetitions to induce fatigue failure. These criteria, detailed below, are: the strain criterion, the dissipated energy criterion and a combination of both (the SHRP approach).

2.3.1 Strain Criterion

Fatigue cracking is considered to be a tensile phenomenon. It is the repetitive application of tensile forces, below that required to induce immediate fracture, that is responsible for the initiation (crack formation) and propagation (crack growth) of fatigue cracks (31). After recognizing the fact that strain, and not stress, is the determinant of fatigue (51), the laboratory fatigue behavior of asphalt concrete has been described as a relationship between initial tensile strain and number of load repetitions to failure (fatigue life). The initial strain from a test is plotted against the number of cycles to failure on a log-log scale. A linear relationship between logarithms of strain and fatigue life is found, which satisfies the following phenomenological fatigue model:

$$N_f = a\,(1/\varepsilon)^b \qquad (2.2)$$

where: N_f = number of repetitions to failure (fatigue life),

ε = applied initial tensile strain, and

a and b = experimentally determined regression constants.

The above equation is applicable to a given asphalt mix tested at a specific temperature. To account for the differences observed on the fatigue life–strain relationship as temperature varies, a mixture stiffness term (E) is added to the previous equation as follows (52):

$$N_f = c\,(1/\varepsilon)^d\,(1/E)^e \qquad (2.3)$$

where: E = initial flexural stiffness,

c, d, e = experimentally determined regression constants.

This equation is applicable for both controlled-stress and controlled-strain tests.

2.3.2 Dissipated Energy Criterion

A dissipated energy approach has also been used for describing fatigue behavior. To understand this energy concept, the behavior of a linear-elastic material is compared to that of a viscoelastic material, during loading and unloading. When an elastic material is loaded, the energy stored in the system is equal to the area under the stress-strain curve. During unloading, the stress-strain path followed coincides with that of the loading path, hence all the energy is recovered. For a viscoelastic material, the unloading phase follows a different path than the loading phase, therefore exhibiting a behavior called hysterisis.

When a viscoelastic material, like asphalt concrete, is tested in pulsed or sinusoidal loading, a phase lag exits between applied strain and measured stress. If stress is plotted against strain, as shown in Figure 2.1, a hysteresis loop results. The dissipated energy is defined as the area inside the hysteretic stress-strain loop; that is:

$$u_i = \int \sigma(t)\, d\varepsilon \qquad (2.4)$$

where, u_i = dissipated energy per loading cycle i,

σ = stress, a function of time,

$d\varepsilon$ = corresponding infinitesimal strain change.

The dissipated energy is due to damage growth in the material and is related to the formation of micro-cracks. It is also associated with the binder's viscous flow, which dissipates the energy as heat. French research reported temperature increases of 1°C to 2°C within trapezoidal fatigue samples tested at 20°C, 25 Hz (53).

The amount of energy dissipated per loading cycle varies during a fatigue test. Figure 2.2 illustrates the variation of dissipated energy with number of load repetitions. In a controlled-strain fatigue test, the dissipated energy per cycle decreases with increasing number of load applications, whereas, in a controlled-stress test, the dissipated energy increases with number of load applications. The total or cumulative dissipated energy to failure is the area under the relationship between dissipated energy and number of cycles, up to the number of repetitions to failure. In other words, the cumulative dissipated energy to failure is calculated by summing the dissipated energy throughout a fatigue test up to the instant of failure.

A number of studies (32,54,55,56) have used the energy concept to characterize asphalt mix fatigue behavior. They have shown that the cumulative dissipated energy to failure (CDE_f) and fatigue life (N_f) are related by the following relationship:

$$CDE_f = A\,N_f^{\,Z} \qquad (2.5)$$

where: A, Z = experimentally determined regression constants.

Equation (2.5) implies that the log-log plot of cumulative dissipated energy to failure versus fatigue life is a linear relationship. It should be noted that Equations (2.2) and (2.3) describe fatigue life as a function of initial mix properties, whereas in Equation (2.5), fatigue life is related to the overall viscoelastic mix behavior during a test. In other words, the cumulative dissipated energy to failure is estimated from the fundamental stress-strain relationships with phase shifts from the start of a test to the end.

Early European research (54,57) indicated that cumulative dissipated energy is the sole independent factor that predicts fatigue life and is independent of mix formulation, test temperature and frequency. Later work (55,56) suggested that Equation (2.5) is not independent of mix formulation, but is independent of test method (two and three point loading), mode of loading (controlled-stress and controlled-strain), temperature (10° to 40°C), and frequency (10 to 50 Hz). More recently, SHRP researchers showed (32,58) that cumulative dissipated energy is sensitive to mix variables (asphalt type, aggregate type, and air-void content), test variables (temperature, strain level) and mode of loading (controlled-strain vs. controlled–stress).

In this study, an energy-based model, similar to Equation (2.3), will be used, where the effect of temperature on cumulative dissipated energy is accounted for by introducing the mix stiffness (E) as follows:

$$CDE_f = a\, E^b\, N_f^{\,c} \qquad (2.6)$$

where: a, b, and c = experimentally determined regression constants.

2.3.3 SHRP Approach

In 1994, one SHRP research team (32) presented a fatigue model based on a combination of strain and dissipated energy criteria. The model, which could be used for surrogate mix analysis, is as follows:

$$N_f = 2.738\text{x}10^5 \exp(0.077\ VFB)\ \varepsilon^{-3.624}\ S_o''^{\,-2.720} \qquad (R^2 = 0.79) \qquad (2.7)$$

where: N_f = number of repetitions to a 50% reduction in stiffness

ε = tensile strain, in/in

VFB = voids filled with bitumen $[V_b / (V_a + V_b)]$, %

V_a, V_b = air-voids content and bitumen volume, respectively, and

S_o'' = initial flexural loss stiffness (S_o.sinδ) estimated from shear testing, psi; this parameter is directly related to the initial dissipated energy; δ = phase angle between stress and strain.

2.4 Shift Factors

For the purpose of fatigue performance model development, laboratory fatigue relationships should be calibrated to simulate actual in-service pavement behavior. This is done by the use of appropriate shift factors. Fatigue life measured in the laboratory (N_{lab}) is defined as the number of load repetitions to initiate cracking in a sample, while in an actual pavement, fatigue life (N_{field}) occurs when cracks reach the surface and initiate a loss in pavement serviceability. Therefore, an actual pavement can withstand (N_{field} - N_{lab}) more load repetitions than the laboratory sample. To account for these differences between laboratory and field response, shift factors, defined as (N_{field}/N_{lab}), are used to convert laboratory fatigue characteristics of AC to those representative of field performance. Factors believed to contribute to the shift factor include:

- Transverse distribution of traffic: due to the lateral wander of traffic within a lane, there is no one-to-one correspondence between wheel load passages in the design lane and load repetitions at the center of the wheel path.
- Rest periods and healing of material: the repetitive nature of the laboratory testing is more severe than what the material is subjected to in the field, where rest periods between loadings are thought to contribute to the healing of the material.
- Crack propagation: the additional number of load repetitions between crack initiation at the bottom of the layer (equivalent to lab fatigue life) and its appearance at the surface is taken into consideration.

Shift factors proposed by various researchers vary from 2 to more than 700. The amount of shift adopted by an agency obviously depends on its definition of laboratory fatigue life and the extent of permissible cracking in the field before the pavement is considered to have failed in fatigue. Shift factors also depend on the type of test, mode of loading and the AC layer thickness. Bonnot (59) showed that a mix tested in repeated flexure has a life at least 50 percent larger than that tested in direct tension. For a given mix, the shift factor is larger for controlled-stress loading than that for controlled-strain. The shift factor was also shown to increase as the thickness of the AC layer increases (60,61). Some researchers tried to quantify the different effects influencing the shift factor. Brown et al. (62) used a shift factor of 440, which was the product of three effects: a factor of 20 for rest periods, a factor of 20 for crack propagation and a factor of 1.1 for the transverse wander of wheel loads. Tseng et al. (63) found the shift factor attributable to both the effects of healing during the rest period between load applications and the relaxation of residual stresses during load applications, and gave analytical expressions for each of these shift factors. More recently, Harvey et al. (64) showed the dependence of shift factors on strain level and traffic index for typical California pavements.

Agencies used these shift factors in conjunction with laboratory obtained fatigue models to develop fatigue performance models for flexible pavements (60,65). The most commonly used model is that by Finn et al. (66,67). The shift factors were developed using laboratory fatigue relations reported by Monismith et al. (68) and cracking observations of the AASHTO road test sections. The recommended shift factors for AC layers thicker than 100 mm (4 in.) were 13.0 and 18.4 for 10 percent and 45 percent cracking in the wheel path area, respectively. The 45 percent criterion was the one used by The Asphalt Institute (65) in their design manual (MS-1). The fatigue models using these shift factors are presented in Section 2.6.

It is well known that shift factor development is a costly and effort intensive task that requires many years of in-situ pavement monitoring. One of the most accurate ways to develop shift factors is by observing the fatigue performance of full-scale pavements in test tracks or in accelerated pavement loading experiments, under controlled environmental and loading conditions. It is important to have an indoor facility where the temperature can be monitored. Temperature dependent shift factors can then be determined for a specific type of mix included in a pavement section usually used by an agency. The Heavy Vehicle Simulator used by Caltrans and described by Harvey et al. (69) is a good example of such a facility. In the future, the use of such facilities should help shed light on some unanswered questions: how does the shift factor vary with temperature? Is the shift factor applied to a conventional AC layer the same as that for a modified AC layer of the same thickness, or for that matter, of a reduced thickness?

2.5 Time-Dependent Effects on Fatigue Behavior

An important issue for in-service AC pavements is the effect of time on their fatigue behavior. With time, AC pavements are subjected to the effects of both aging and traffic. Oxidative aging stiffens the AC layer, whereas load repetitions due to traffic reduces mix air-void content in the wheel path. It is conventional wisdom that, for thick AC layers, both aging and traffic contribute to the stiffening of the mix, hence enhancing its fatigue life. For thin AC layers (where controlled-strain behavior governs), stiffening due to aging reduces fatigue life, whereas reduction of air-voids due to traffic increases it. The net effect of the simultaneous application of aging and traffic is difficult to quantify. It can be argued however that, because fatigue cracking depends on the interaction of the mix and the rest of the pavement structure, aging should not be evaluated by its effects on stiffness alone. Instead, the effects of aging and air-voids on the stiffness and fatigue characteristics of the mix should be evaluated through prediction of pavement fatigue life. Recently, an attempt was made (70) to evaluate the effects of aging on mix fatigue behavior using the SHRP developed long-term oven aging (LTOA) procedure. Controlled-strain flexure beam tests were performed on two typical Californian mixes. These were prepared in the laboratory with two different asphalts and one aggregate type. Results showed that the effect of LTOA on beam fatigue life depended on asphalt type. These results, coupled with multilayer elastic analysis, predicted that for thin and thick pavement structures, fatigue life increases with LTOA, except for a thin pavement with high air-voids.

It should be mentioned that laboratory mix aging (LTOA) may not simulate all the long-term effects that occur in the field. Many of the detrimental effects assumed to be caused by other time-dependent processes such as water-damage may not be simulated by LTOA. Further laboratory testing, model development and field observations should be performed to better understand time-dependent effects on pavement fatigue performance, as opposed to only measuring stiffness to assess the effects of aging.

2.6 Pavement Fatigue Prediction

It is as early as the late forties that pavement cracking attributable to fatigue was recognized in both the US (71) and Europe (72). Hveem's work (73) demonstrated that the larger the traffic-induced deflection of a pavement and the higher the frequency of its occurrence, the greater the propensity for fatigue cracking. That work suggested maximum or limiting deflections for the satisfactory performance of flexible pavements. These limitations were selected to preclude surface cracking. It was implied that if deflections did not exceed these values during a reasonable service life, unlimited number of repetitions could be applied without fatigue cracking. This deflection approach is one of the approaches used nowadays in design of asphalt concrete overlays (74).

The first pavement fatigue prediction models were developed in the late seventies. Based on laboratory test data presented in the form of Equation 2.3, several models have been proposed to predict fatigue life of pavements (44,60,65,67). To develop these models, laboratory results have been calibrated by applying shift factors based on field observations to provide reasonable estimates of in-service life cycle of a pavement based on limiting the amount of cracking due to repeated loads. A detailed discussion of shift factors is presented in Section 2.4.

Based on results from a wide range of mixes, asphalts, and testing conditions, Bonnaure et al. (44) developed models where pavement fatigue life can be predicted knowing asphalt volume and mix stiffness for either controlled-stress or controlled-strain conditions. These models are as follows:

For controlled-strain conditions:

$$N_f = (0.17\,PI - 0.0085\,PI.V + 0.0454\,V - 0.112)^5\,\varepsilon^{-5}\,S^{-1.8} \qquad (2.8)$$

For controlled-stress conditions:

$$N_f = (0.0252\ PI - 0.00126\ PI.V + 0.00673\ V - 0.0167)^5\ \varepsilon^{-5}\ S^{-1.4} \qquad (2.9)$$

where: N_f = fatigue life

PI = asphalt penetration index

V = volume of asphalt in mix, %

ε = tensile strain in asphalt layer, and

S = mix stiffness, psi.

A NCHRP study (67) resulted in a fatigue prediction equation applicable for up to 10 percent cracking in the wheel path area:

$$\log N_f = 15.947 - 3.291 \log (\varepsilon/10^{-6}) - 0.854 \log (E/10^3) \qquad (2.10)$$

where: N_f = allowable number of 80 kN (18 kips) equivalent single axle loads

ε = tensile strain in asphalt layer

E = complex stiffness modulus, psi.

For greater than 45 percent cracking, the number of allowable repetitions is 1.38 times that from Equation 2.10 at a particular strain level.

The Asphalt Institute (65,75) included the following fatigue equation in its design manual. The equation is applicable for pavements with asphalt layer thickness greater than 100 mm (4 in.) and fatigue cracking greater than 45 percent in the wheel path area:

$$N_f = 18.4\ C\ (0.00432\ \varepsilon^{-3.29}\ E^{-0.854}) \qquad (2.11)$$

where: N_f = allowable number of 80 kN (18 kips) ESALs

ε = tensile strain in asphalt layer

E = complex stiffness modulus, psi

$C = 10^M$

$M = 4.84\ [V_b / (V_a + V_b) - 0.69]$

V_a = volume of air-voids in mix, %, and

V_b = volume of asphalt in mix, %

For pavements with less than 100 mm (4 in.) in thickness, Craus et al. (76) developed equations for 10 percent and 30 percent cracking as follows:

For less than 10 percent cracking:

$$\log N_f = 15.870 - 3.291 \log (\varepsilon/10^{-6}) - 0.854 \log (E/10^3) \quad (2.12)$$

For greater than 30 percent cracking:

$$\log N_f = 15.988 - 3.291 \log (\varepsilon/10^{-6}) - 0.854 \log (E/10^3) \quad (2.13)$$

More recently, a reliability-based approach was presented by SHRP researchers (32). Using Equation 2.7 presented, the predicted fatigue life ($N_f = N_{supply}$), is compared, probabilistically, to the fatigue life required (N_{demand}). For a mix to be satisfactory, the following should be true:

$$N_{supply} \geq M \,.\, N_{demand} \quad (2.14)$$

where: M = a reliability multiplier (> 1) whose value depend on the design reliability and on variabilities of the estimates of N_{supply} and N_{demand}.

$N_{demand} = ESAL_{20^oC} / SF$, where

$ESAL_{20^oC}$ = design equivalent single axle loads adjusted to a constant temperature of 20°C.

SF = empirically determined shift factor, equal to 10 and 14 for 10% and 45% allowable cracking in the wheel paths, respectively.

The reliability multiplier is estimated from the following:

$$\text{Ln}(M) = Z_R \,.\, [\text{Var}\{\text{Ln}(N_{supply})\} + \text{Var}\{\text{Ln}(N_{demand})\}]^{0.5} \quad (2.15)$$

where: Z_R = a function of the reliability level which assumes values of 0.253, 0.841, 1.280, and 1.640 for reliability levels of 60, 80, 90, and 95 percent, respectively,

$Var\{Ln(N_{supply})\}$ = variance of natural logarithm of N_{supply}, and

$Var\{Ln(N_{demand})\}$ = variance of natural logarithm of N_{demand}.

It should be mentioned in this context that the Superpave performance prediction software did not adopt the above model for fatigue prediction. Instead, a fracture mechanics-based model, developed by another SHRP research team, was included (50). Nevertheless, all Superpave performance prediction models developed during SHRP are currently being revised and corrected through a research project (77) aimed at producing a valid system for analyzing materials with these models. A description of the fracture mechanics approach to fatigue of asphalt concrete is given by Zhang (78).

2.7 Summary

The review presented in this chapter showed that fatigue of asphalt-aggregate mixes is a complicated process, influenced not only by mix variables but also by test parameters and methods. The addition of CRM to these mixes seems to have the potential to enhance fatigue resistance, as detailed in Chapter one. However, the review revealed that the laboratory-prepared CRM mixes used in previous studies do not represent mixes placed in the field. Mix variables (binder content, air-voids) and compaction methods used in the laboratory failed to produce specimens that have similar properties as those obtained from in-situ pavements. Therefore, there is a need to obtain in-situ specimens to properly characterize the fatigue behavior of these mixes. This study fulfilled this need and collected specimens from actual pavements, as detailed in the next chapter.

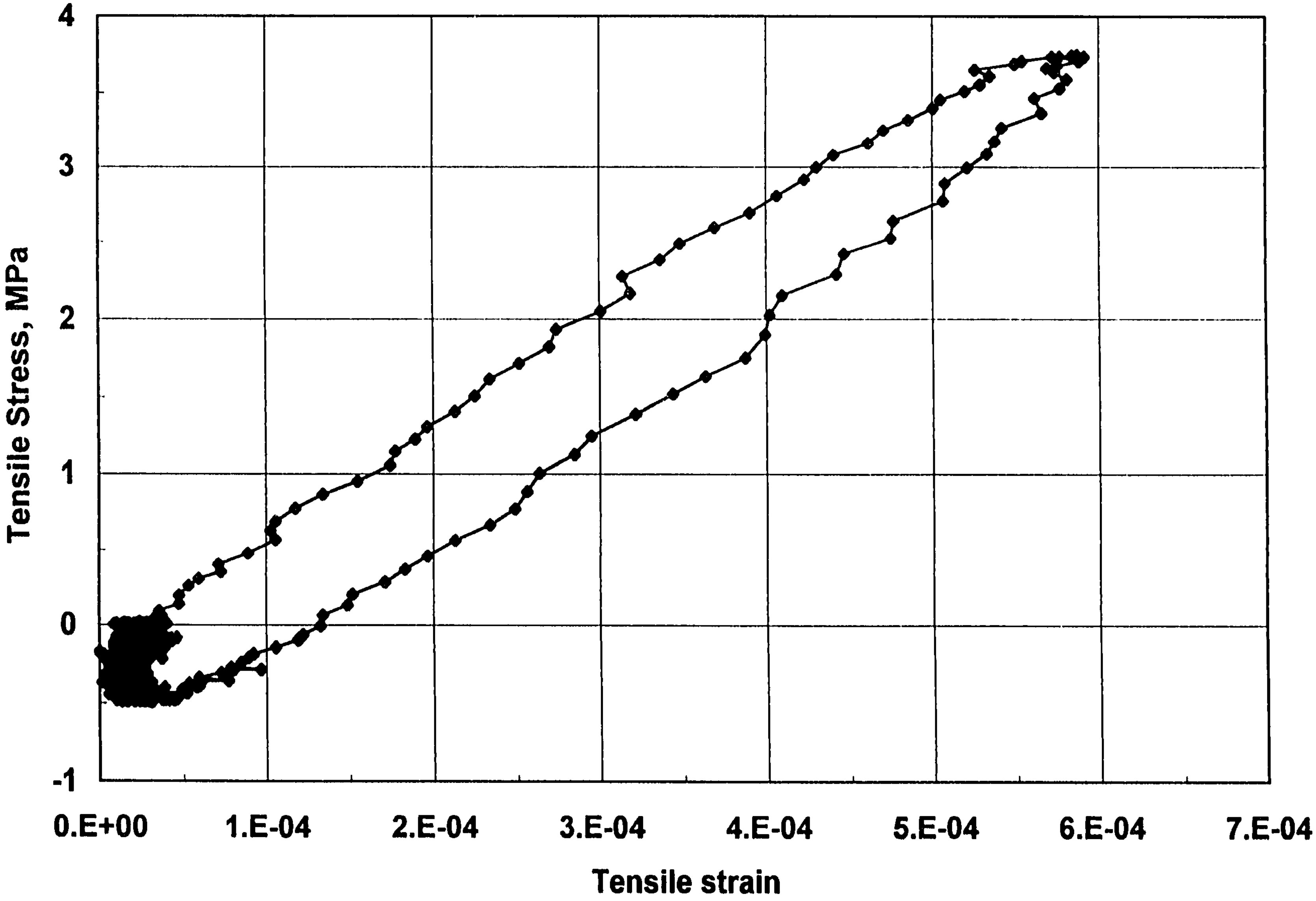


Figure 2.1 : A Typical Hysterisis Loop at a Given Load Cycle

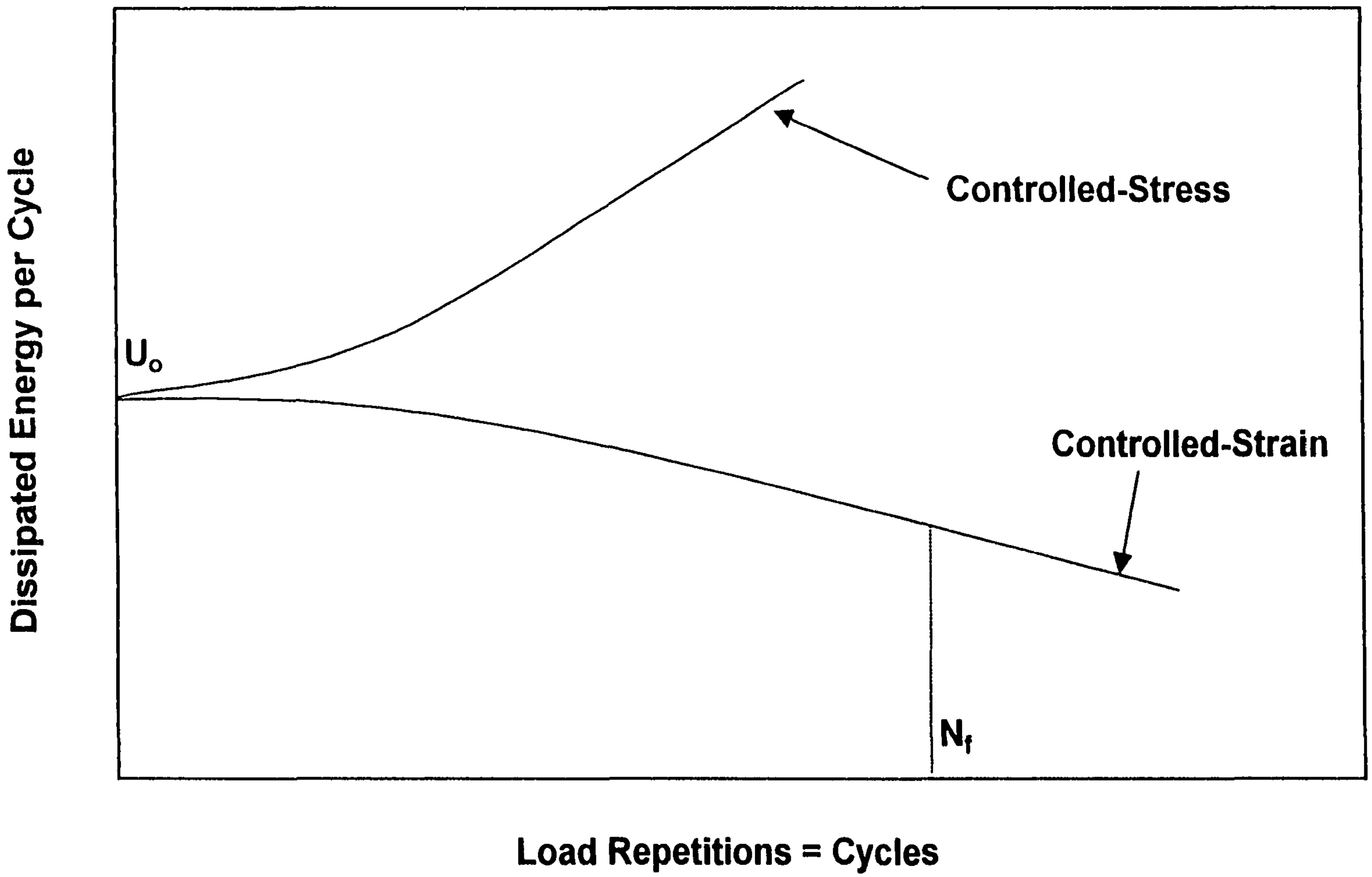


Figure 2.2 : Effect of Mode-of-Loading on Dissipated Energy

CHAPTER THREE

LABORATORY STUDY

3.1 Introduction

The last two chapters presented background information pertaining to the fatigue behavior of conventional and CRM mixes. The review revealed the limitations of some of the studies in terms of failing, in the laboratory, to replicate field-placed mixtures. To overcome this shortcoming, the mixes in this study were obtained from in-situ pavements. This chapter describes conventional and CRM mixes, as well as test procedure used in this study.

3.2 Materials Used

The asphalt concrete materials tested in this research program were obtained from two sources: California and Alaska. Slabs from actual pavements were cut outside the wheel path and brought to the laboratory. Rectangular fatigue beam specimens were then sawn (transverse to traffic direction) to the desired dimensions: 50 x 50 x 400 mm (2 x 2 x 16 in). An ultrasonic wave device (a James Instruments, 54 kHz V-meter) was used as a quality control tool to discard test beams having preexisting cracks or defects. The bulk density of each beam was then obtained according to AASHTO T166 (*Bulk Specific Gravity of Compacted Bituminous Mixtures Using Saturated Surface-Dry Specimens*). These densities appear in the heading of individual beam data in Appendix A. In addition, maximum density and air-voids content of some selected beams were determined according to AASHTO T209 (*Maximum Specific Gravity of Bituminous Paving Mixtures*) and AASHTO T269 (*Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures*), respectively.

Two Californian mixes were tested: a conventional dense-graded asphalt concrete mix (CAC-DG) and a gap-graded asphalt-rubber hot mix (ARHM-GG). Both mixes were designed and placed in 1990 in the Los Angeles area according to the California Department of Transportation specifications. Tables 3.1 and 3.2 show mix properties for CAC-DG and ARHM-GG, respectively. A relatively stiff asphalt, AR-4000, was used with about 20 percent CRM (by weight of binder) to produce the asphalt-rubber for the ARHM-GG mix.

The Alaskan mixes tested consisted of two rubberized mixes:

1- A dense-graded asphalt-rubber concrete (ARC) obtained from a test road section (placed in 1988) on Danby street in Fairbanks. A Mapco AC-2.5 base asphalt was used with 18 percent CRM (by weight of binder) to produce the asphalt-rubber. Table 3.3 shows mix ingredient properties for this mix.

2- A PlusRide™ gap-graded rubber modified asphalt concrete (PR) obtained from "A street" in Anchorage. Placed in 1985, it contained 2.5 percent CRM by mix weight and a Chevron AC-5 asphalt. Specification limits and actual properties for this mix are shown in Table 3.4.

To compare the fatigue behavior of the asphalt-rubber concrete and PlusRide mixes to a typical Alaskan control mix, fatigue testing data obtained by Coetzee et al. (79,80) on conventional Alaskan dense-graded AC-5 mixes were used. Table 3.5 summarizes their properties. Testing temperatures for this mix ranged from -12°C to 27°C (10°F to 80°F).

3.3 Apparatus and Testing Procedure

A third-point flexural beam fatigue apparatus was used to conduct the fatigue tests. A schematic of this apparatus is shown in Figure 3.1. The third-point loading system is typically used for beam fatigue testing in order to insure a constant bending moment over the middle third of the beam. This apparatus was installed on an MTS electrohydraulic closed-loop testing system and enclosed in an environmental chamber to control testing temperature.

A beam sample ready to be tested was slid horizontally into the apparatus. A pneumatically controlled beam clamping system was activated to restrain the beam. The rotating reaction clamps (item 7 in Figure 3.1) ensured that the beam is free to rotate at these locations, simulating a simply supported beam with zero moments at the ends. The sample was then instrumented with two extensometers to measure tensile and compressive strains, and a displacement gage to control the beam center deflection and to provide feedback to the MTS servovalve controller. The extensometers had a gage length of 25.4 mm (one inch) and were attached to the middle top and bottom faces of the specimen by means of a double face adhesive tape. Three thermocouples were attached to the specimen to measure its temperature. The environmental chamber was then closed and the temperature controller set at the desired testing temperature. The specimen was conditioned at this temperature for at least four hours before the actual test began. Tests were conducted at 32, 22, -2, -12 and -29°C (90, 72, 28, 10 and -20°F) for CAC-DG and ARHM-GG, and at 22, -2, -12 and -29°C (72, 28, 10 and -20°F) for ARC and PR mixes.

All tests were conducted in the controlled-strain (-deflection) mode. The function generator of the MTS was pre-programmed to deliver a prescribed deflection at the center of the specimen in the form of a haversine wave of 0.10 second duration, followed by a rest period of 0.90 second, for a total cycle time of 1.0 second. The haversine deflection pulse had the following form:

$$\delta(t) = \delta_i \sin^2\left(\frac{\pi}{T}t\right) \tag{3.1}$$

where: δ_i = deflection amplitude at cycle i

t = time in seconds ($0 < t < 0.1$ sec)

T = loading period (0.1 sec).

The deflection pulse applied a peak deflection to the center of the beam then returned the specimen back to its original horizontal position, simulating the flexing of the asphalt concrete layer under traffic loading conditions. A load cell was used to measure the reaction of the specimen to the applied deflection pulse.

A PC-based data acquisition software was used to collect data from three available channels: the tensile and compressive strain channels (top and bottom extensometers), and the load channel. Data was collected at predetermined strokes (load repetitions) at a rate of 1000 data points per second on the three channels. This data was stored in the PC till the end of the test, then transferred and saved on a disk. A data reduction program was used to convert the raw data into response parameters in engineering units. Appendix A contains the reduced data for all specimens tested in this research program.

Fatigue failure of a specimen was assumed to occur when the initial flexural stiffness of the specimen is reduced by 50 percent, corresponding to a 50 percent reduction in the initial measured load. This criterion is typically used for controlled-strain fatigue tests and is believed to correspond to crack initiation in the specimen (9). The ratio of stiffness at any given repetition to the initial stiffness (at the start of the test) is plotted against the number of load cycles. The fatigue life of the specimen (N_f) is reached at $E/E_i = 0.5$, or when the initial stiffness of the specimen is reduced by half. This stiffness reduction is due to fatigue damage accumulation in the sample in the form of distributed damage sites (micro-cracks) which do not necessarily coalesce into larger cracks. Recently, it has been demonstrated (81) that asphalt concrete layer stiffness reduction can be related to the cumulative fatigue damage of a flexible pavement, as shown in Figure 3.2.

3.4 Summary

In this study, the testing program consisted of, first, obtaining slabs of conventional and CRM mixes from actual pavements in California and Alaska, then sawing these slabs into beam specimens. A third-point flexural beam fatigue apparatus was used to conduct fatigue tests in the controlled-strain mode. Tests were performed over a wide range of temperatures. Fatigue failure of a tested sample was assumed to occur when the initial flexural stiffness of the specimen is reduced by 50 percent.

Table 3.1 : Conventional Asphalt Concrete (Dense-Graded) Mix Properties

Placed in 1990

The CAC-DG mix is according to Caltrans Standard Specifications, 1998 Edition, Section 39-2.02

Binder : AR-4000

Aggregate gradation :

Sieve	% passing	Specf.
3/4"	100	100
1/2"	97	95-100
3/8"	89	80-95
#4	65	59-66
#8	48	43-49
#30	29	22-27
#200	8	0-11

Mix Properties :

Binder content : 5.7 % by weight of total mix

Voids : 1.6 %

Density : 24.1 KN/m^3 (153 pcf)

Table 3.2 : Asphalt-Rubber Hot Mix (Gap-Graded) Properties

Placed in 1990

The ARHM-GG mix is according to the Proposed Standard Specifications for Public Works Construction, Section 203-11.3

Binder : Asphalt-Rubber consisting of :

- AR-4000 asphalt cement
- 4% asphalt modifier (by weight of asphalt-rubber)
- 80% asphalt-cement and modifier
- 20% rubber

Rubber gradation specification:

Sieve	% passing
#18	100
#10	95-100
#16	40-80
#30	5-30
#50	0-15
#200	0-3

Aggregate gradation :

Sieve	% passing	Specf.
3/4"	100	100
1/2"	95	90-100
3/8"	81	78-92
#4	35	28-42
#8	24	15-25
#30	15	5-15
#200	5	2-7

Mix Properties :

Binder content : 7.3 % by weight of total mix

Voids : 1.6 %

Density : 23.4 KN/m^3 (148 pcf)

Table 3.3 : Asphalt-Rubber Concrete (Danby St., Fairbanks) Mix Properties

Test section of about 100 m (300 ft) placed in 1988

Pavement section :
5 cm (2 in.) asphalt-rubber concrete
15 cm (6 in.) crushed aggregate base
91 cm (36 in.) borrow containing less than 7 % fines

Binder :
78 % Mapco AC2.5
18 % Atlos 1515 ground tire rubber
(15 % Atlos blend + 3 % Tonson C112)
4 % Califlux GP extender oil

Rubber gradation :

Sieve	Tonson C112	Atlos vulcanized	Specf. limits
#8	100.0	100.0	100
#10	100.0	100.0	100
#16	99.8	99.0	85-100
#30	57.3	53.5	40-80
#50	21.5	16.9	10-45
#100	8.2	5.9	0-10
#200	2.4	0.0	0-5

Aggregate gradation :

Sieve	% passing	Specf.
3/4"	100	100
3/8"	77	71-83
#4	51	45-57
#10	37	33-41
#40	25	21-28
#200	6	4-8

Mix properties :
Optimum binder : 6.4 % by weight of total mix
Voids : 2.2 %
Flow : 8.8
Stability : 6853 N (1540 lbs)
Density : 23.3 KN/m^3 (148.3 pcf)

Table 3.4 : PlusRide (A St., Anchorage) Mix Properties

Placed in 1985

Pavement section :
5 cm (2 in.) PlusRide Asphalt
7.5 cm (3 in.) asphalt treated base
15 cm (6 in.) subbase , Grading "C"
91 cm (36 in.) borrow Type "A"+borrow Type "B"

Binder :
Chevron AC5 , 0.25 % antistrip , 2.5 % rubber by total mix

Rubber gradation :

Sieve	% passing	Specf.
1/4"	100	100
#4	98	76-100
#10	30	28-42
#20	16	16-24

Aggregate gradation :

Sieve	% passing	Specf.
3/4"	100	100
3/8"	56	50-62
1/4"	37	30-44
#10	26	20-32
#30	19	12-23
#200	8	7-11

Mix properties :

Optimum binder : 7.5 % by weight of total mix
Voids : 1.4 %
Flow : 25
Stability : 3872 N (870 lbs)
Density : 22.9 KN/m^3 (145.9 pcf)

Table 3.5 : AC-5 Mix Properties (Coetzee et al., 1988)

Work done in 1988

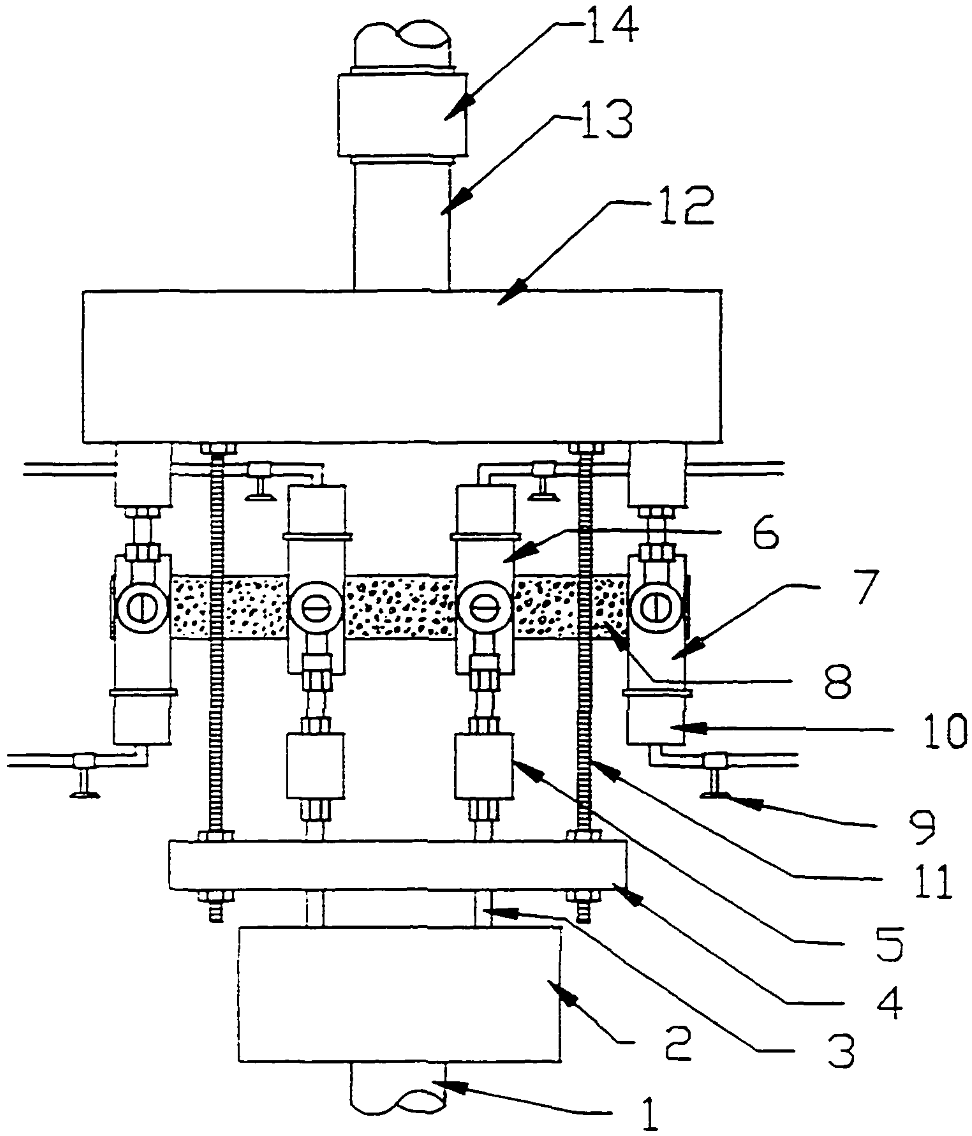
Binder : AC-5 (North Pole Refining)

Aggregate gradation :

Sieve	%passing	Specf.
3/4"	100	100
3/8"	81	68-88
#4	58	45-65
#10	43	30-50
#20	31	-
#40	24	12-28
#100	12	-
#200	7	3-10

Mix design properties :

Optimum binder :	5.8 % by weight of total mix
Voids :	2.0 %
Flow :	13
Stability :	8901 N (2000 lbs)
Density :	23.5 KN/m^3 (149.2 pcf)



Key:
1- MTS Actuator
2- Lower Load Distributor
3- Loading Rod
4- Guiding Plate
5- Loading Bar
6- Rotating Load Clamp
7- Rotating Reaction Clamp
8- Specimen
9- Clamping Pressure Valve
10- Clamping Piston
11- Connecting Rod
12- Upper Load Distributor
13- Connecting Rod
14- Load Cell

Figure 3.1 : Schematic of Fatigue Beam Apparatus

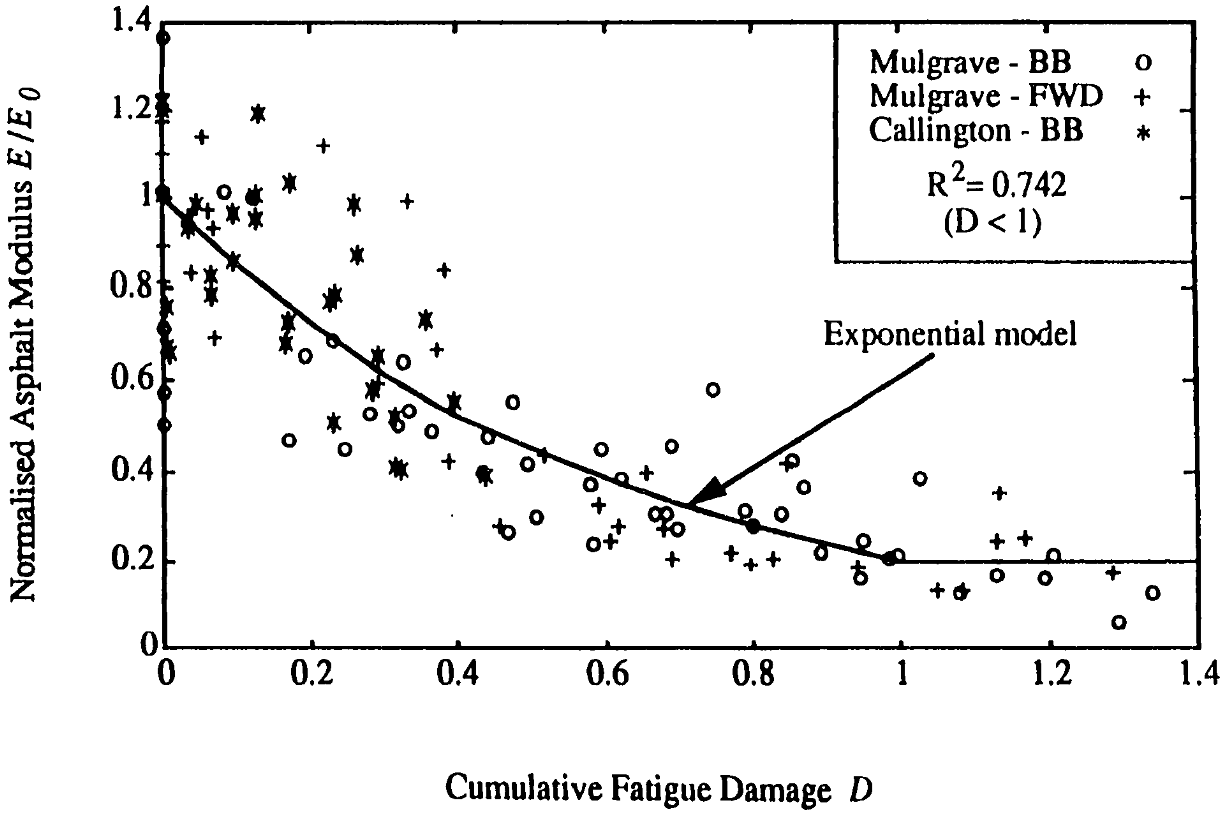


Figure 3.2 : Asphalt Layer Modulus Reduction as a Function of Cumulative Fatigue Damage (Collop and Cebon, 1996)

CHAPTER FOUR

ANALYSIS OF RESULTS

4.1 Introduction

In this chapter, results of fatigue tests conducted in this study are presented. Measured and calculated mix properties are discussed and compared. These properties include flexural, tensile and compressive moduli, phase angle, fatigue life, and cumulative dissipated energy.

Appendix B includes a table for each of the mixes included in this study, where a summary of test variables and calculated properties is presented. The data included in these tables are used in the following sections.

4.2 Flexural Stiffness

In the multilayer elastic analysis of flexible pavements, each layer is characterized by a Poisson's ratio and a stiffness. For the asphalt concrete layer, it is important to adequately characterize the mix at temperatures anticipated in the field. In this study, the flexural stiffness was determined for all mixes at each of the test temperatures. In this case, the flexural stiffness is the initial stiffness, calculated at the first load repetition in a test. Due to fatigue, mix stiffness decreases with load repetitions.

The flexural stiffness expression is derived from the elastic beam theory. Figure 4.1 shows a schematic of a third-point loading configuration of a beam, similar to the one used in this study. Assuming small deflections and linearly elastic material, the centerline deflection of the beam is given by the elastic beam theory as:

$$\Delta = \frac{Fa(3L^2 - 4a^2)}{24EI} \quad (4.1)$$

where: Δ = beam centerline deflection due to vertical forces F

L = distance between outermost beam supports

a = L/3, since third-point loading condition

E = beam flexural stiffness (modulus)

I = beam moment of inertia = $bh^3/12$

b, h = beam width and depth, respectively.

Replacing "I" and "a" by their respective values from above and taking into consideration the fact that the load cell of the fatigue apparatus measures a load P equal to twice force F (see Figure 4.1), the beam deflection becomes:

$$\Delta = \frac{23PL^3}{128Ebh^3} \tag{4.2}$$

If the beam geometry (L, b, h), load (P) and deflection (Δ) are known, the flexural stiffness is obtained from Equation (4.2) as:

$$E = \frac{23PL^3}{128\Delta bh^3} \tag{4.3}$$

From mechanics, the extreme fiber stress due to flexure is given as:

$$\sigma = \frac{Mc}{I} \tag{4.4}$$

where: M = beam centerline moment

c = distance from neutral axis to extreme fiber = h/2

Since the beam centerline moment is given by FL/3 = PL/6, then the extreme fiber stress is:

$$\sigma = \frac{\left(\frac{PL}{6}\right)\left(\frac{h}{2}\right)}{\left(\frac{bh^3}{12}\right)} = \frac{PL}{bh^2} \tag{4.5}$$

The extreme fiber strain is given by $\varepsilon = \sigma/E$. Taking the ratio of Equation (4.5) to that of (4.3), the calculated strain is obtained as:

$$\varepsilon = 108\ \Delta\ h\ /\ 23\ L^2 \tag{4.6}$$

For a given beam being tested in fatigue, the flexural stiffness at any cycle (load repetition) is computed using Equation (4.3), knowing the load (P) and deflection (Δ) at that specific cycle. Figures 4.2 and 4.3 show the variation of flexural stiffness with temperature for all mixes. As expected, an increase in temperature results in a decrease of stiffness. Stiffness-temperature relationships were obtained using quadratic polynomial regressions as follows:

$$\log E_0 = a + bT + cT^2 \qquad (4.7)$$

where: E_o = initial flexural stiffness, MPa

T = test temperature, °C

a, b, and c = experimentally determined regression coefficients.

Table 4.1 shows the coefficients associated with these regressions. A relatively high coefficient of determination (R^2) is obtained for all mixes, ranging from 0.96 to 0.99.

The variation of flexural stiffness with temperature for the Californian mixes (CAC and ARHM) is shown in Figure 4.2. From the regression plots presented in this figure, it is seen that ARHM is less stiff than CAC at all temperatures, except at -29°C, where both mixes have the same stiffness. The ratio of CAC stiffness to that of ARHM seems to decrease as temperature decreases. This ratio is 1.72, 1.58 and 1.22 at 20°C, 0°C and -20°C, respectively.

Figure 4.3 illustrates the variation of flexural stiffness with temperature for the Alaskan mixes (AC-5, AR and PR). Both rubberized mixes (AR and PR) are less stiff than the conventional AC-5 mix over the entire temperature range. The AC-5 mix stiffness is 30 to 45 percent greater than that of the rubberized mixes. The stiffnesses of AR and PlusRide mixes seem to be equal at the high and low ends of the temperature range. Between 10°C and -20°C, the PlusRide stiffness is, at most, 10 percent larger than that of AR.

4.3 Tensile and Compressive Moduli

The bimodular behavior of transportation materials has been recognized in a number of studies. The bimodular nature of cement stabilized soils used as bases has been demonstrated (82,83). Khanal and Mamlouk (84) obtained different moduli for asphalt concrete specimens tested under different tensile and compressive load configurations and temperatures. It was suggested to refine the multilayer elastic analysis by using appropriate modulus values depending on whether the material is in tension or in compression.

In this study, both tensile and compressive extreme fiber strains were measured by strain gages. This permitted the evaluation of the bimodular behavior of the mixes tested. Using simple beam theory and assuming that the tensile and compressive moduli for a given load are different, the tensile (σ_t) and compressive (σ_c) stresses are given as (82,83):

$$\sigma_t = \frac{3M}{bh^2}\left(\frac{\varepsilon_c + \varepsilon_t}{\varepsilon_t}\right) \tag{4.8}$$

and

$$\sigma_c = \frac{3M}{bh^2}\left(\frac{\varepsilon_c + \varepsilon_t}{\varepsilon_c}\right) \tag{4.9}$$

where: ε_t, ε_c = tensile and compressive strain, respectively

M = beam centerline moment

b, h = beam width and depth, respectively.

The corresponding tensile (E_t) and compressive (E_c) moduli are obtained as follows:

$$E_t = (3M/bh^2)\,(\varepsilon_c + \varepsilon_t)/\varepsilon_t^2 = \frac{PL}{2bh^2}\left(\frac{\varepsilon_c + \varepsilon_t}{\varepsilon_t^2}\right) \tag{4.10}$$

$$E_c = (3M/bh^2)\,(\varepsilon_c + \varepsilon_t)/\varepsilon_c^2 = \frac{PL}{2bh^2}\left(\frac{\varepsilon_c + \varepsilon_t}{\varepsilon_c^2}\right) \tag{4.11}$$

It should be mentioned that, according to the last two equations, when tensile and compressive strains are equal, E_t and E_c are equal to the flexural modulus, E_f (Equation 4.3).

In this study, the initial (first cycle) tensile and compressive moduli were determined. Figures 4.4-4.7 show the variation of these moduli with test temperature. Tables 4.2 and 4.3 summarize regression coefficients for the modulus-temperature relationships.

Figures 4.4-4.7 show that, at high temperatures, compressive modulus is greater than tensile modulus, for all mixes. As temperature decreases, the difference between the two types of moduli seems to get smaller. This is illustrated in Table 4.4, where the modular ratio at three temperatures (20, 0 and -20°C) is determined. Modular ratio is defined as the ratio of compressive modulus to tensile modulus (E_c/E_t). This Table shows that the CAC mix exhibits a more pronounced bimodular behavior than ARHM. The compressive modulus of ARHM is at most 8 percent larger than its tensile modulus, whereas, for CAC, this percentage reaches 42%.

For AR and PR mixes, Figures 4.6 and 4.7 show that both mixes exhibit bimodular behavior at temperatures greater than -10°C. Modular ratio for AR varies between 1.06 to 1.28 as temperature increases from 0°C to 20°C (Table 4.4.). For the PR mix, the modular ratio seems to remain constant at about 1.17 as temperatures varies from 0°C to 20°C.

Flexural stiffness variation with temperature is also included in Figures 4.4-4.7 for comparison purposes. For the CAC mix (Figure 4.4), flexural and compressive moduli seem to be equal. For the three rubberized mixes (Figures 4.5-4.7), as temperature decreases from 20°C to -20°C, flexural stiffness is, on the average, 15 to 40 percent greater than compressive stiffness.

4.4 Phase angle

When a viscoelastic material, like asphalt concrete, is tested in pulsed or sinusoidal loading, a time lag exits between applied strain and measured stress. Figure 4.8 shows a schematic of a stress and strain variation during a cycle of a fatigue test. The time lag is the difference in time between the stress and strain peaks. In this case, strain lags behind stress. The time lag (t, seconds) is converted into a phase angle (ϕ, degrees) as follows:

$$\phi = 360\, t\, f \qquad (4.12)$$

where f is the test frequency in Hz.

For purely elastic materials, the phase angle is zero, whereas for purely viscous materials, the phase angle is 90°. For viscoelastic materials, like asphalt concrete, the phase angle is between zero and 90°. Thus, the phase angle is an important parameter for describing the viscoelastic properties of asphalt concrete.

Figures 4.9-4.13 show the variation of the initial (first cycle) phase angle with temperature for all mixes included in this study. As expected, phase angle increases with an increase in test temperature. This was true for both conventional and rubberized mixes. At low temperatures, elastic behavior prevails and the phase angle is relatively small; as temperature increases, the viscoelastic behavior becomes predominant and the phase angle increases. Quadratic polynomial regressions were used to fit phase angle-temperature data. Table 4.5 summarizes the regression coefficients. Relatively high coefficients of determination (R^2) were obtained for all mixes.

Since mix phase angle and flexural stiffness are both temperature-dependent properties, a relationship can be found between phase angle and flexural stiffness for a given mix. Figure 4.14 shows this relationship for the Californian mixes, where the ARHM phase angle is smaller than that of the CAC, except at high stiffness values (i.e. low temperatures). The same behavior is seen in Figure 4.15 where the Alaskan rubberized mixes (AR, PR) have smaller phase angle values than the conventional AC-5 mix. The following quadratic polynomial regression was used to fit the data:

$$\phi_o = a + b\,(\log E_o) + c\,(\log E_o)^2 \tag{4.13}$$

where: ϕ_o = initial phase angle, degrees

E_o = initial flexural stiffness, MPa

a, b, and c = experimentally determined regression coefficients.

Table 4.6 summarizes the regression coefficients for all mixes. Comparing coefficients of determination (R^2) from Tables 4.5 and 4.6, it is noticed that those from Table 4.6 are greater than those from Table 4.5. This observation suggests that a better correlation exists between phase angle and flexural stiffness than between phase angle and temperature. Phase angle-stiffness regressions will therefore be used in Chapter 6 when modeling mix fatigue life.

4.5 Fatigue Life

Traditionally, the fatigue behavior of an asphalt concrete, tested at a given temperature, is characterized by a relationship of the form:

$$N_f = a\,(1/\varepsilon_o)^b \qquad (4.14)$$

where: N_f = fatigue life

ε_o = initial tensile strain, and

a and b = experimentally determined coefficients.

This equation plots as a straight line on a log-log plot, and can be written, for regression purposes, as follows:

$$\log N_f = \log a - b \log \varepsilon_o \qquad (4.15)$$

Figures 4.16-4.20 show the strain-based fatigue life plots developed for both conventional and rubberized mixes. The regression lines included in these figures are according to Equation (4.15) above. Regression coefficients are summarized in Table 4.7. From Figures 4.16-4.20, it is seen that fatigue life plots follow expected trends: a decrease in applied strain yields longer fatigue life for all mixes, at all test temperatures. As expected for a strain-controlled mode of testing, results show that fatigue life increases with an increase in test temperature, for both conventional and rubberized mixes. It is also observed that, for CAC and AC-5 conventional mixes (Figures 4.16 and 4.18), fatigue lines become flatter (milder slope) as test temperature decreases, which indicates that conventional mixes are more susceptible to strain changes than rubberized mixes at these low temperatures.

To account for the differences observed in fatigue life as test temperature varies, a mixture stiffness term (E_o) is added to Equation (4.14) as follows:

$$N_f = a\,(1/\varepsilon_o)^b (1/E_o)^c \qquad (4.16)$$

where, E_o = initial flexural stiffness

a, b, and c = experimentally determined constants.

For regression purposes, Equation (4.16) can be written as follows:

$$\log N_f = \log a - b \log \varepsilon_0 - c \log E_0 \qquad (4.17)$$

To include temperature effects on fatigue life, the same data used above was regressed according to Equation (4.17). Regression coefficients are summarized in Table 4.8. As expected, correlations for the stiffness-dependent fatigue regressions (Table 4.8) are lower than those for the strain-based fatigue relationships (Table 4.7).

The coefficients shown in Table 4.8 can be used to write fatigue equations in the same form as the Asphalt Institute equation shown in (2.11). The equations below are for the mixes included in this study:

For CAC: $N_f = 6.084 \times 10^{-5}\, \varepsilon^{-5.308}\, E^{-2.274}$ (4.18)

For ARHM: $N_f = 7.316 \times 10^{-5}\, \varepsilon^{-5.678}\, E^{-2.456}$ (4.19)

For AC-5: $N_f = 8.539 \times 10^{-2}\, \varepsilon^{-5.577}\, E^{-3.446}$ (4.20)

For ARC: $N_f = 1.282 \times 10^{-9}\, \varepsilon^{-7.364}\, E^{-2.733}$ (4.21)

For PR: $N_f = 4.691 \times 10^{-5}\, \varepsilon^{-3.349}\, E^{-0.612}$ (4.22)

where: E = initial flexural stiffness, MPa

ε = initial tensile strain, m/m.

In order to compare the relative fatigue resistance of mixes, Equation (4.16) is used to backcalculate fatigue life at 0°C and 20°C. Coefficients a, b, and c in Equation (4.16) are obtained from Table 4.8, while the stiffness (E_o) values at 0°C and 20°C are estimated from Equation (4.7) and Table 4.1. For a specific mix at a given temperature, replacing a, b, c and E_o in Equation (4.16) gives a strain-based fatigue equation. Figures 4.21 and 4.22 show the fatigue life variation with strain for all mixes at 0°C and 20°C. For the Californian mixes, Figure 4.21 shows that, at a given strain level, the ARHM has a longer fatigue life than CAC at both temperatures. Figure 4.22 shows fatigue life predictions for Alaskan mixes. At 20°C, the AC-5 and AR mix seem to have almost similar fatigue lives at high strain levels. As strain level decreases, fatigue life for AR becomes greater than that of AC-5. At 0°C, the AR seems to have greater fatigue life than PR, while both AR and PR yield longer fatigue life than the AC-5 mix.

It should be mentioned that, to compare the fatigue performance of mixes, it is necessary to use laboratory obtained data, in conjunction with mechanistic analyses, to determine how mixes will perform in the pavement structure under anticipated traffic loads and environmental conditions. Such a procedure is applied in Chapter 7, where a newly developed fatigue model is used to compare the fatigue performance of two mixes.

4.6 Dissipated Energy

The energy approach has been used to characterize the fatigue behavior of asphalt mixes in a number of studies (32,54,55,56), where, it was exclusively applied to conventional asphalt concrete. In this study, the energy approach is applied for the first time to rubberized mixes.

The dissipated energy concept was introduced in Chapter 2. Dissipated energy refers to the work done on a specimen per unit volume as it is subjected to a cycle of loading. This work is not recovered but dissipated through the following processes: viscous or damping effects, plastic work, microcrack development and growth, and particle rearrangement and frictional losses.

In a fatigue test, the dissipated energy per loading cycle is the area within the stress-strain hysterisis loop. Figure 4.23 shows typical loops generated in a beam test. As expected in a controlled-strain test, the dissipated energy per cycle decreases with increasing number of cycles. A typical variation of dissipated energy with load cycles is shown in Figure 4.24. The total or cumulative dissipated energy to failure (CDE_f) is the area under the relationship between dissipated energy and number of cycles, up to the number of repetitions to failure. This area is illustrated in Figure 4.24.

In this study, the cumulative dissipated energy to failure is determined for each of the tested beams. The data obtained for both conventional and rubberized mixes confirmed that CDE_f and fatigue life (N_f) are related by the following model (55):

$$CDE_f = A\, N_f^{\,Z} \qquad (4.23)$$

where: A, Z = experimentally determined regression coefficients.

Equation (4.23) plots as a straight line on a log-log plot, and can be written, for regression purposes, as follows:

$$\log CDE_f = \log A + Z \log N_f \qquad (4.24)$$

Regression coefficients A and Z are summarized in Table 4.9. Figures 4.25-4.29 show the variation of CDE_f with fatigue life for all mixes. From these figures, it is seen that an increase in fatigue life is associated with an increase in CDE_f. Results also show an increase in CDE_f with an increase in test temperature, for all mixes. Figure 4.30 shows a comparison of CDE_f regression lines for CAC and ARHM at 22°C and -2°C. The ARHM seems to be capable of dissipating more energy prior to fatigue failure than CAC. Therefore an improved performance of ARHM is expected in comparison with CAC, at both temperatures.

The effect of temperature on cumulative dissipated energy is accounted for by introducing the mix initial flexural stiffness (E_o) as follows:

$$CDE_f = a\, (E_o)^b\, (N_f)^c \qquad (4.25)$$

where: a, b, and c = experimentally determined regression constants

For regression purposes, Equation (4.y) can be written as:

$$\log CDE_f = \log a + b \log E_o + c \log N_f \qquad (4.26)$$

To include temperature effects on dissipated energy, the same data used above was regressed according to Equations 4.20 and 4.21. Coefficients associated with these regressions are summarized in Table 4.10.

To compare the behavior of the Alaskan mixes, Equation (4.25) is used to estimate cumulative dissipated energy at 0°C and 20°C. Coefficients a, b, and c in Equation (4.25) are obtained from Table 4.10, while the stiffness (E_o) values at 0°C and 20°C are estimated from Equation (4.7) and Table 4.1. Figure 4.31 shows the CDE_f

variation with fatigue life. At 20°C, the PR and AR mixes seem to dissipate more energy than the AC-5 mix. At 0°C, the trend is reversed and the AC-5 mix seems to dissipate more energy than both PR and AR mixes.

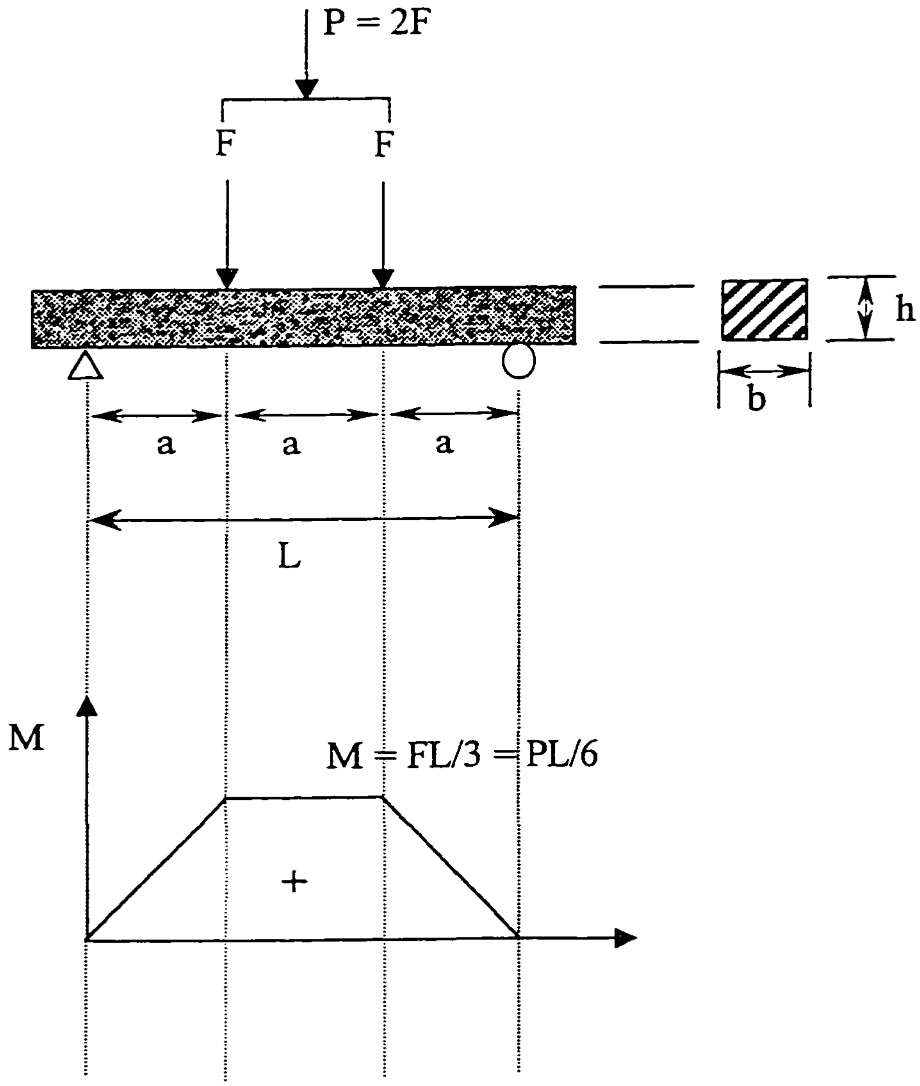
Traditionally, the fatigue performance of asphalt mixes has been correlated to simple parameters, such as initial tensile strain (Equations (4.14) and (4.16)). However, the use of the cumulative dissipated energy seems to better represent the fatigue performance of asphalt mixes. To demonstrate the superiority of the dissipated energy concept, a comparison of coefficients of determination (R^2) is performed. Figure 4.32 shows the comparison of R^2 values of the strain-dependent (Table 4.8) and energy-dependent (Table 4.10) fatigue models. It is seen that the R^2 values for the energy-dependent equation are greater than those for the strain-dependent equation, for both conventional and rubberized mixes. The main reason of this strong correlation is that the dissipated energy includes not only the strain but also the stress and the time-dependent relationship between stress and strain. It also includes comprehensive mix behavior from the initial phase to the final phase of a specimen's life.

For the mechanistic analysis of in-situ pavement structures or for practical pavement design, the strain-based equation is used in conjunction with multilayer elastic analysis, while the energy-based model requires the use of viscoelastic analysis. Attempts have been made (85,86) to develop viscoelastic codes to determine dissipated energy due to dynamic loads. The use of these codes is not widespread yet, mainly due to proprietary considerations.
It should be mentioned finally that the use of an energy-dependent equation is particularly attractive for thin surface layers and overlays. Seldom are these layers subjected to tensile strains. Therefore, the strain-based model cannot be used to estimate fatigue life. The energy-based model is more appropriate in this case, provided an estimation of the in-situ dissipated energy can be obtained.

4.7 Summary and Conclusions

Laboratory tests were performed on specimens obtained from actual pavements, to measure fatigue resistance and material properties of conventional and CRM mixes. Experimental results were used to conduct a comparative analysis of mix properties. Regression equations describing mix properties variation with test temperature were developed. Results showed that CRM mixes are less stiff than conventional mixes. Compressive stiffness was found to be greater than tensile stiffness, for all mixes. Regressions revealed that phase angle is better correlated to mix stiffness, a material property, than to temperature, a test variable. Strain-based fatigue life plots showed that, at a given strain level, CRM mixes had longer fatigue life than conventional control mixes. The cumulative dissipated energy associated with fatigue failure increased with increasing temperature and repetitions to failure. Correlations between cumulative dissipated energy and repetitions to failure indicated higher cumulative dissipated energy for the CRM mixes in comparison with the conventional ones. This illustrates the ability of the CRM mixes to dissipate more energy before 50% reduction in flexural stiffness (i.e., fatigue failure) occurs.

Figure 4.1 : Schematic of Third-Point Loading of a Beam



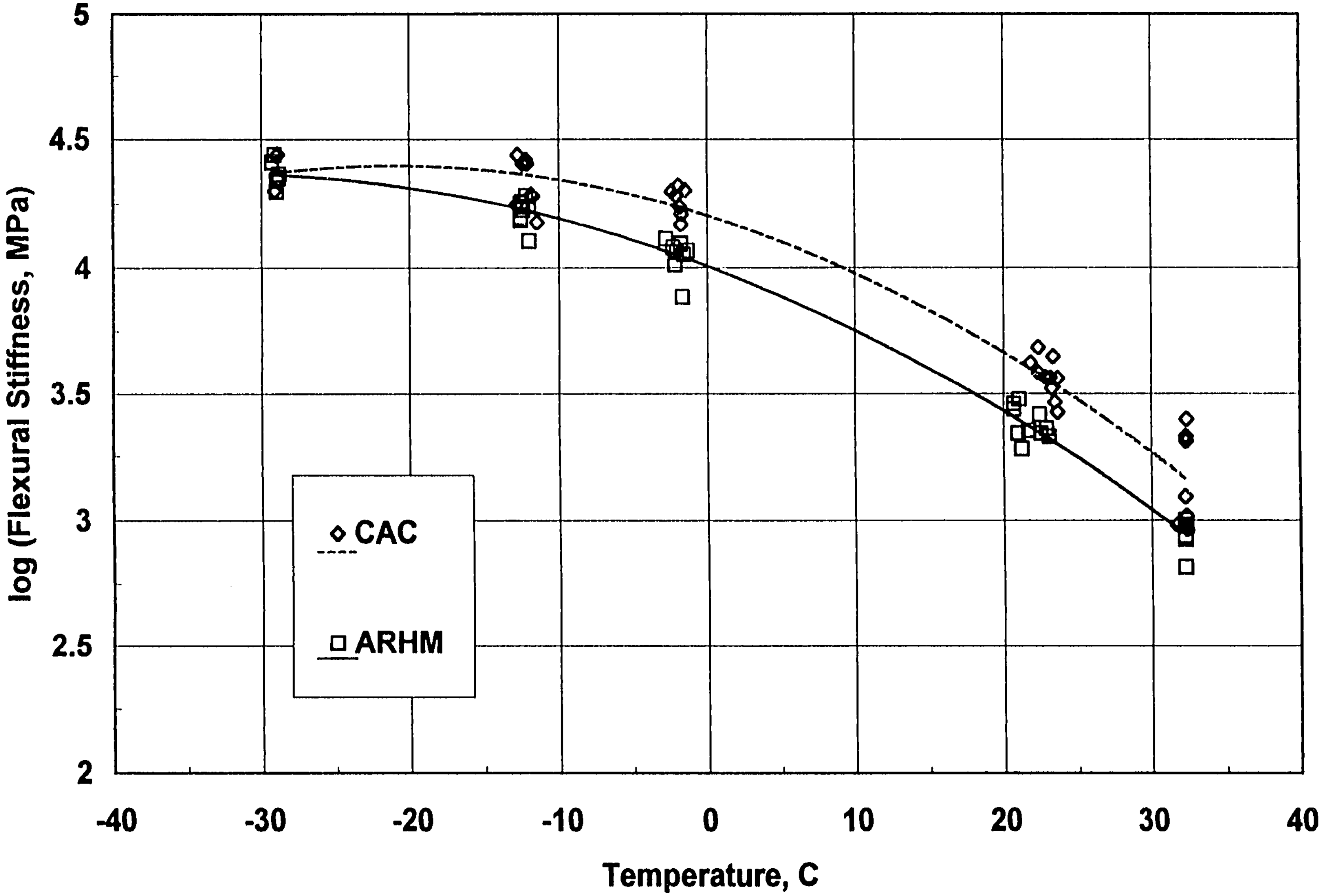


Figure 4.2 : Flexural Stiffness Comparison for CAC and ARHM

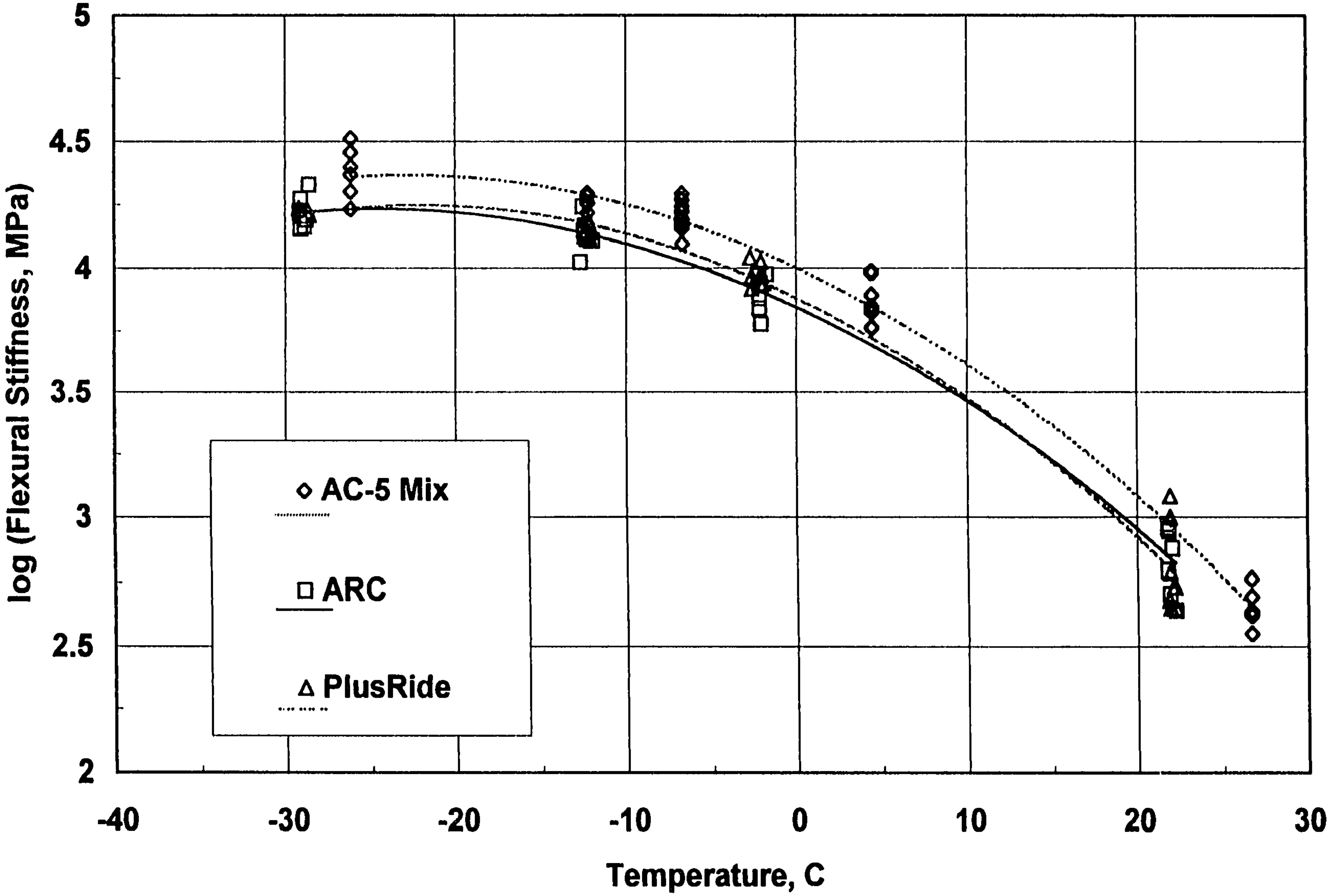


Figure 4.3 : Flexurai Stiffness Comparison for PR, ARC and AC-5 Mixes

Table 4.1 : Coefficients for "Flexural Stiffness - Temperature" Regressions

Mix Type	$\log E_f = a + bT + cT^2$			
	a	b	c	R^2
CAC-DG	4.2043	-1.8212E-02	-4.3285E-04	0.957
ARHM-GG	4.0062	-2.1959E-02	-3.3662E-04	0.989
AC-5	4.0025	-3.1889E-02	-7.0018E-04	0.984
ARC	3.8443	-3.1600E-02	-6.4564E-04	0.979
PlusRide	3.8816	-3.3030E-02	-7.4708E-04	0.980

Note : E_f = Flexural Stiffness, MPa
T = Temperature, °C

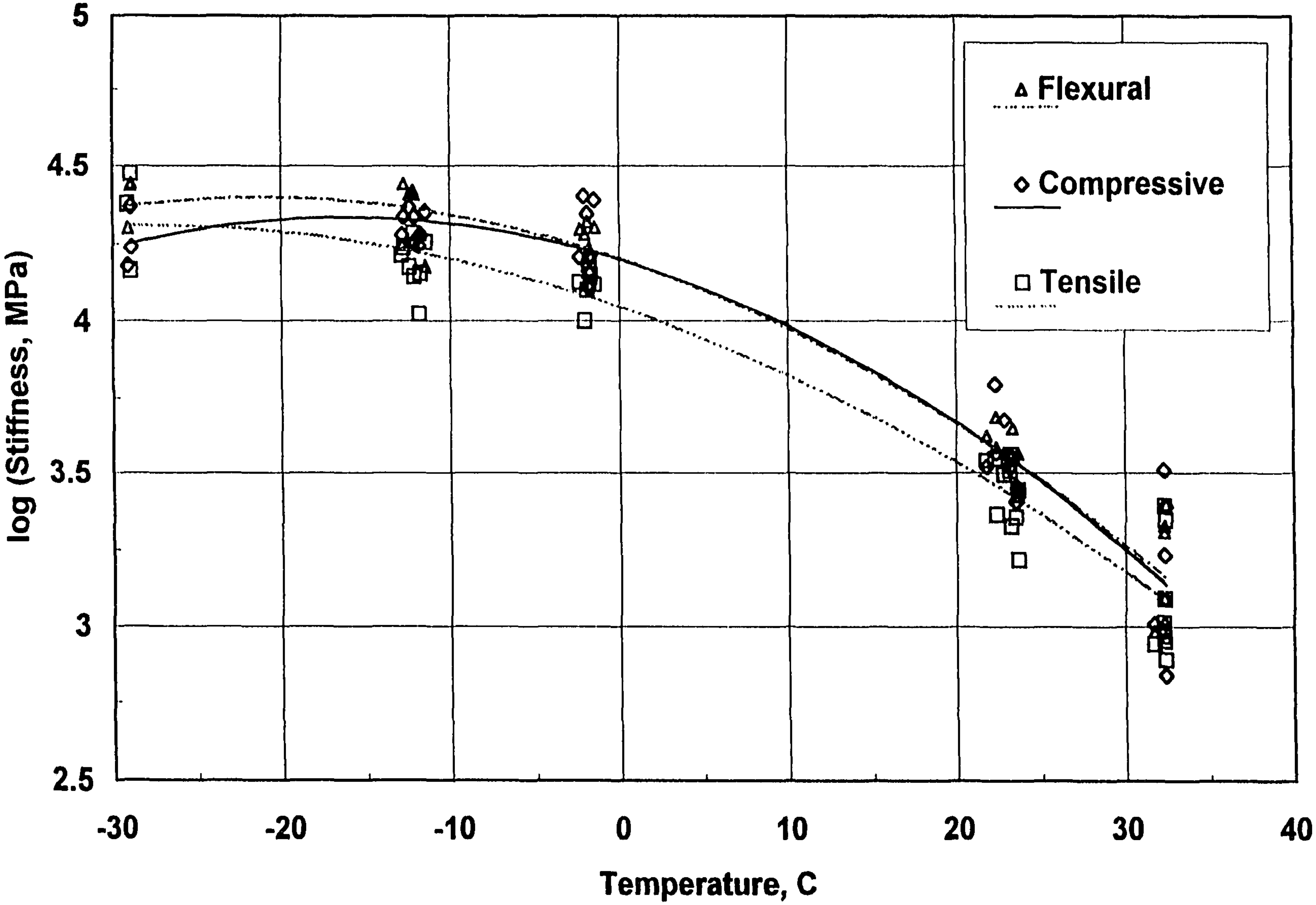


Figure 4.4 : Stiffness Variation with Temperature for CAC

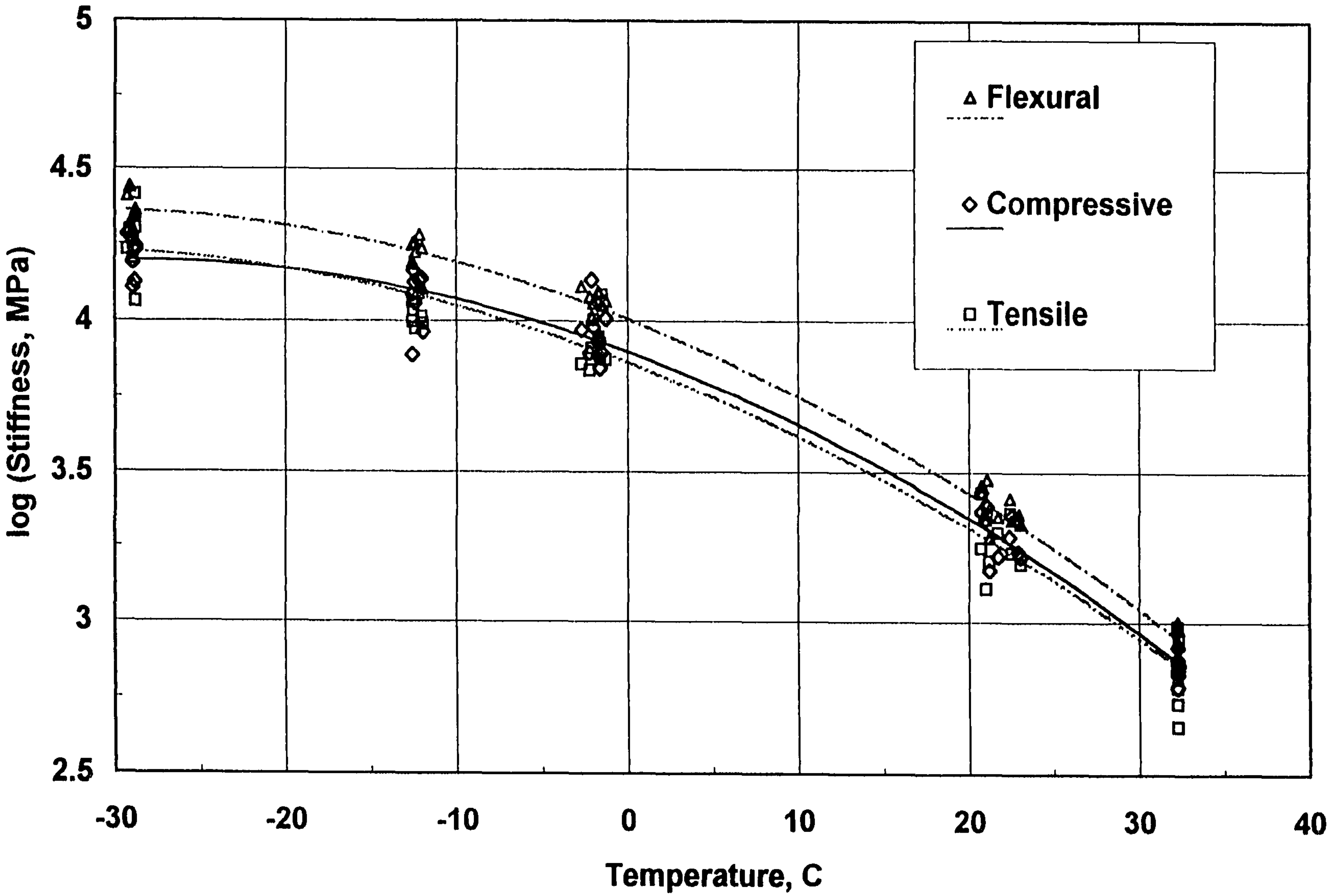


Figure 4.5 : Stiffness Variation with Temperature for ARHM

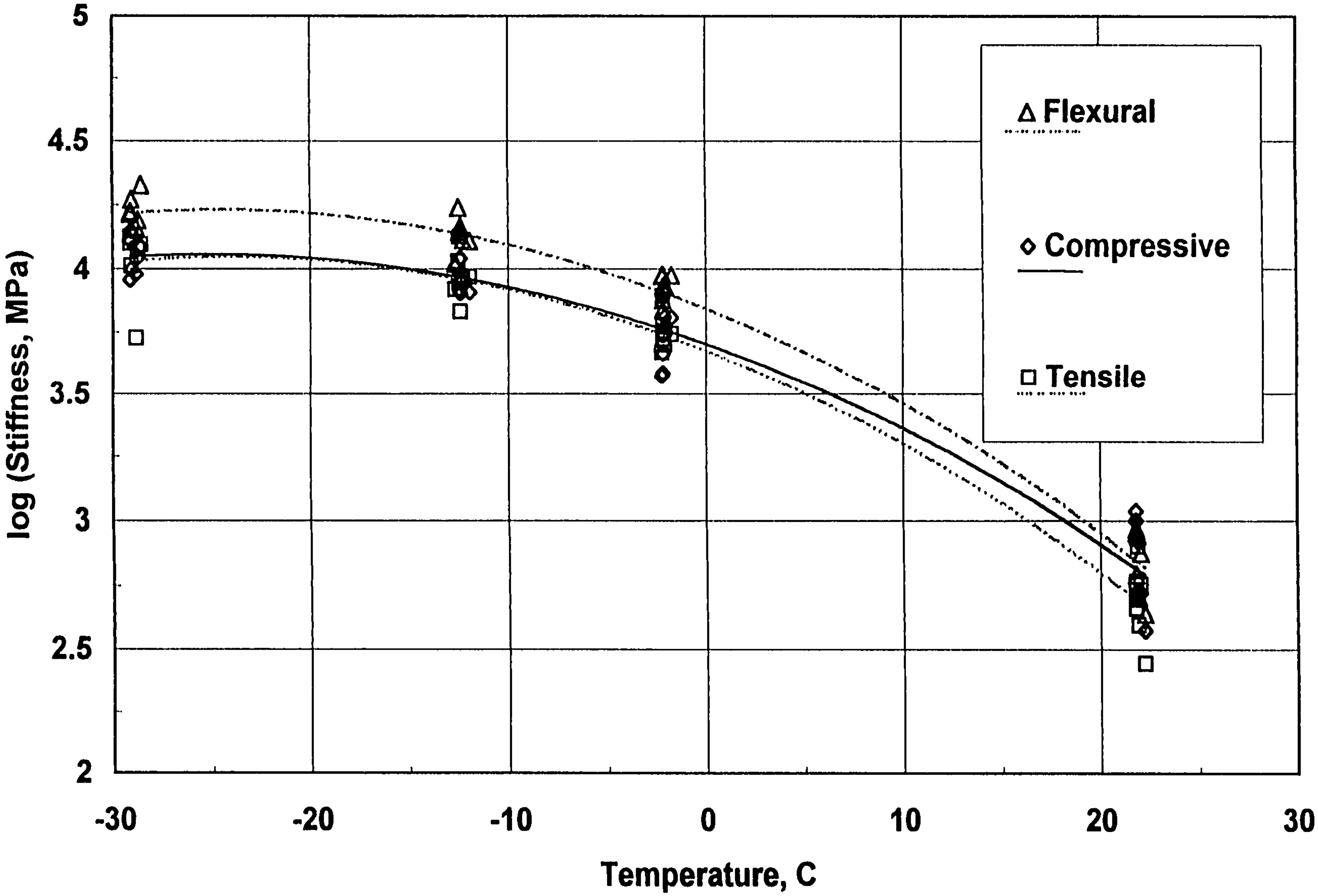


Figure 4.6 : Stiffness Variation with Temperature for ARC

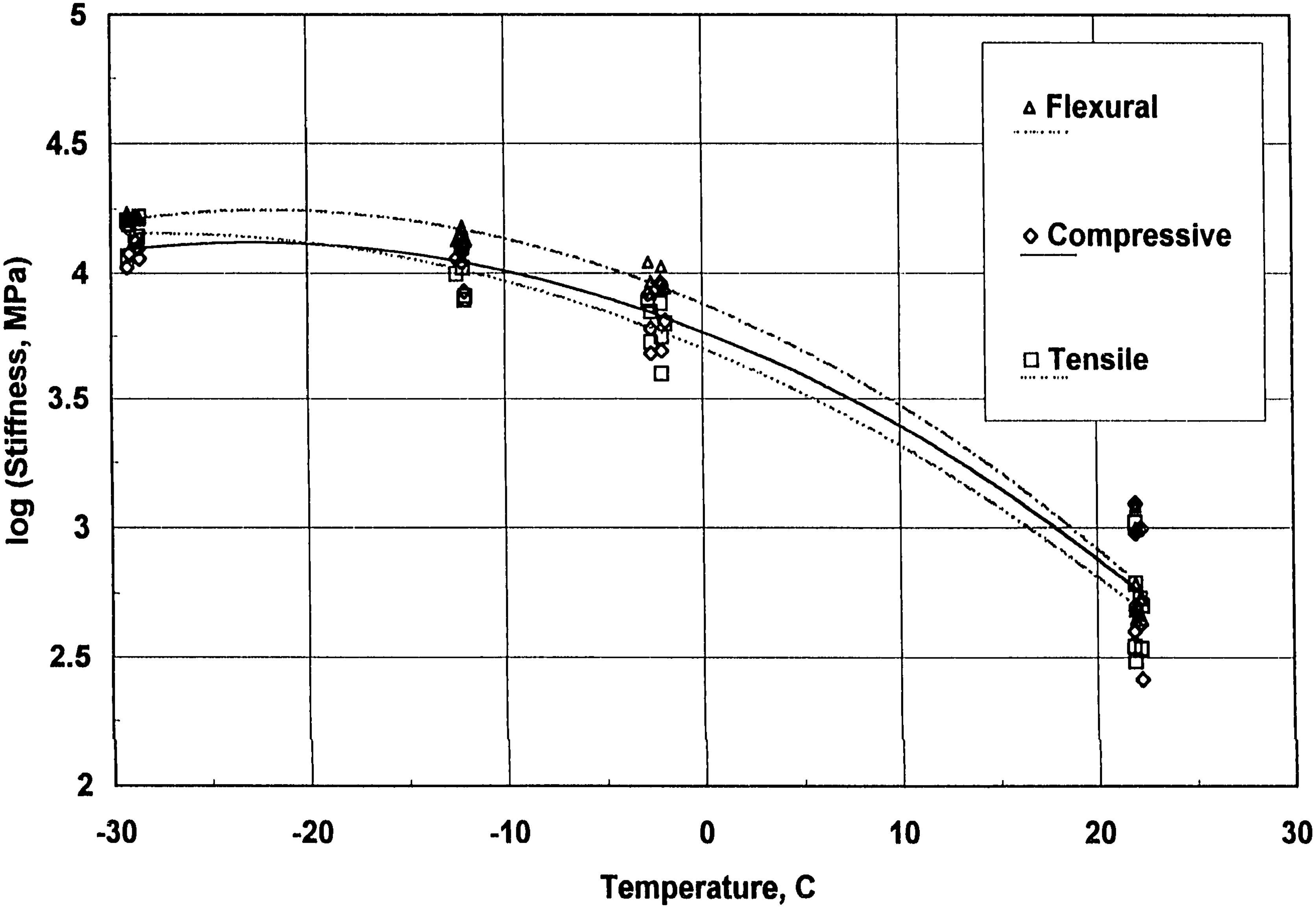


Figure 4.7 : Stiffness Variation with Temperature for PlusRide

Table 4.2 : Coefficients for "Compressive Stiffness - Temperature" Regressions

Mix Type	$\log E_c = a + bT + cT^2$			
	a	b	c	R^2
CAC-DG	4.2008	-1.6411E-02	-5.0628E-04	0.930
ARHM-GG	3.8990	-2.0517E-02	-3.5493E-04	0.978
ARC	3.7024	-2.8324E-02	-5.6470E-04	0.950
PlusRide	3.7689	-3.0793E-02	-6.7536E-04	0.945

Note : E_c = Compressive Stiffness, MPa
T = Temperature, °C

Table 4.3 : Coefficients for "Tensile Stiffness - Temperature" Regressions

Mix Type	$\log E_t = a + bT + cT^2$			
	a	b	c	R^2
CAC-DG	4.0480	-1.8784E-02	-3.3809E-04	0.938
ARHM-GG	3.8649	-2.1411E-02	-3.0711E-04	0.968
ARC	3.6755	-3.0856E-02	-6.4010E-04	0.966
PlusRide	3.7033	-3.2638E-02	-5.8842E-04	0.967

Note : E_t = Tensile Stiffness, MPa
T = Temperature, °C

Table 4.4 : Modular Ratio at Selected Temperatures

Mix	Temp. °C	Predicted Stiffness from Regression, MPa		Modular Ratio
		E_c	E_t	(E_c / E_t)
CAC-DG	20	4678	3444	1.36
	0	15878	11169	1.42
	-20	21208	19429	1.09
ARHM-GG	20	2222	2060	1.08
	0	7925	7327	1.08
	-20	14702	14800	0.99
ARC	20	813	634	1.28
	0	5040	4737	1.06
	-20	11041	10879	1.01
PlusRide	20	764	653	1.17
	0	5874	5050	1.16
	-20	13020	13204	0.99

Note : E_c = Compressive Stiffness

E_t = Tensile Stiffness

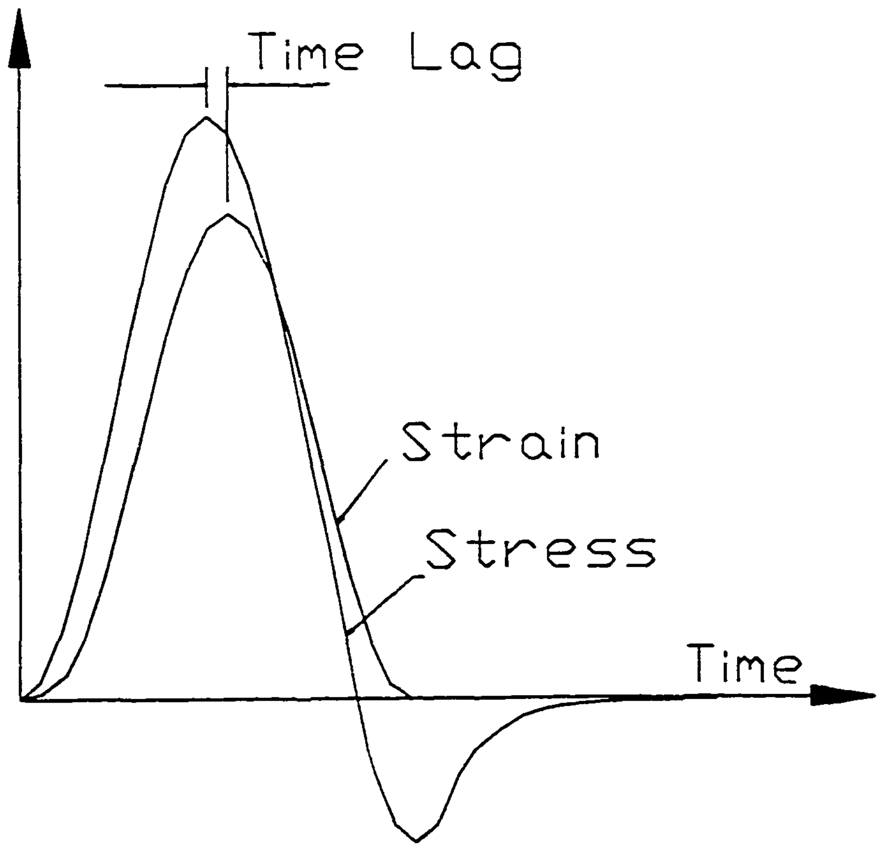


Figure 4.8 : Schematic of Stress-Strain Variation for a Load Cycle

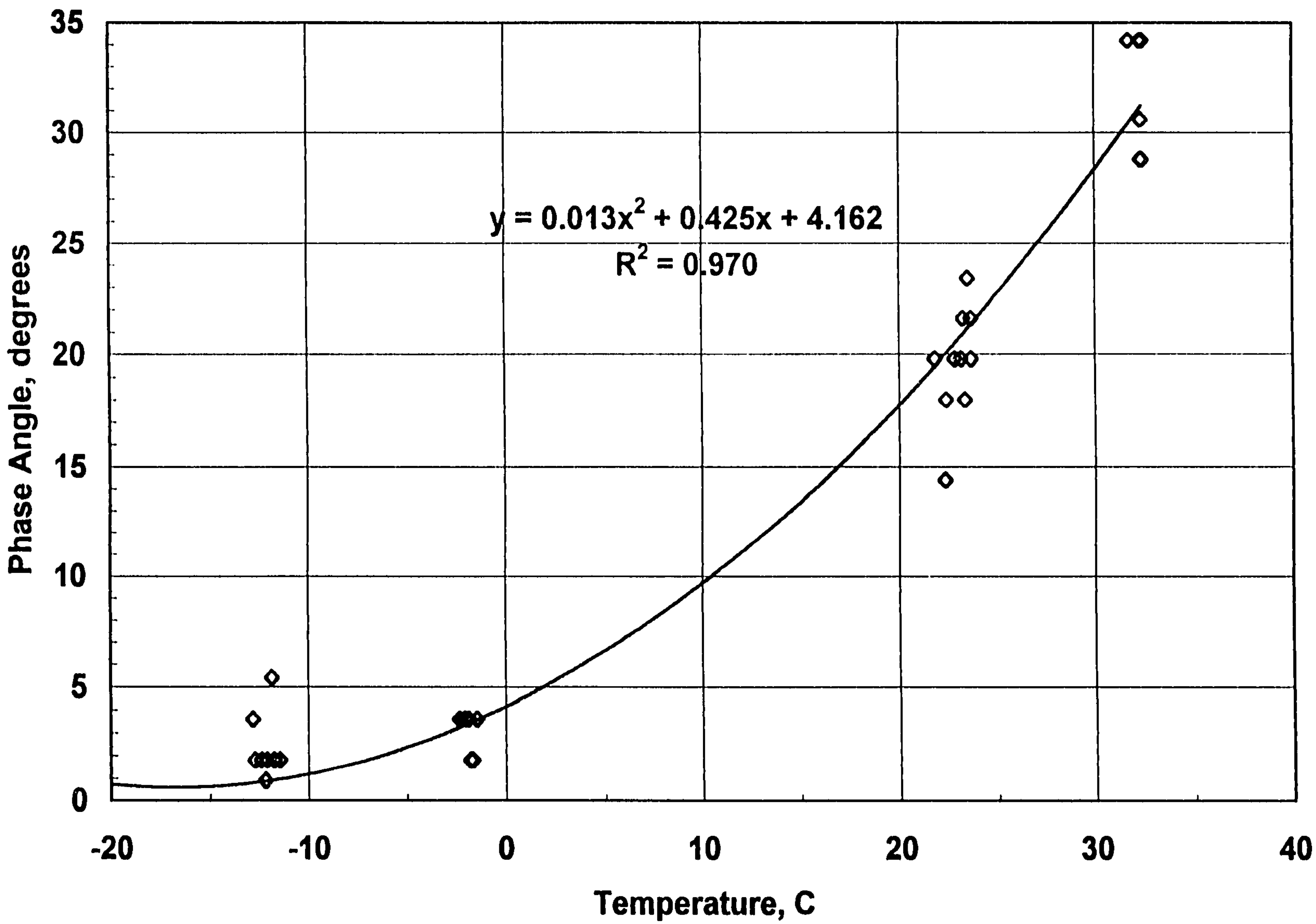


Figure 4.9 : Phase Angle Variation with Temperature for CAC

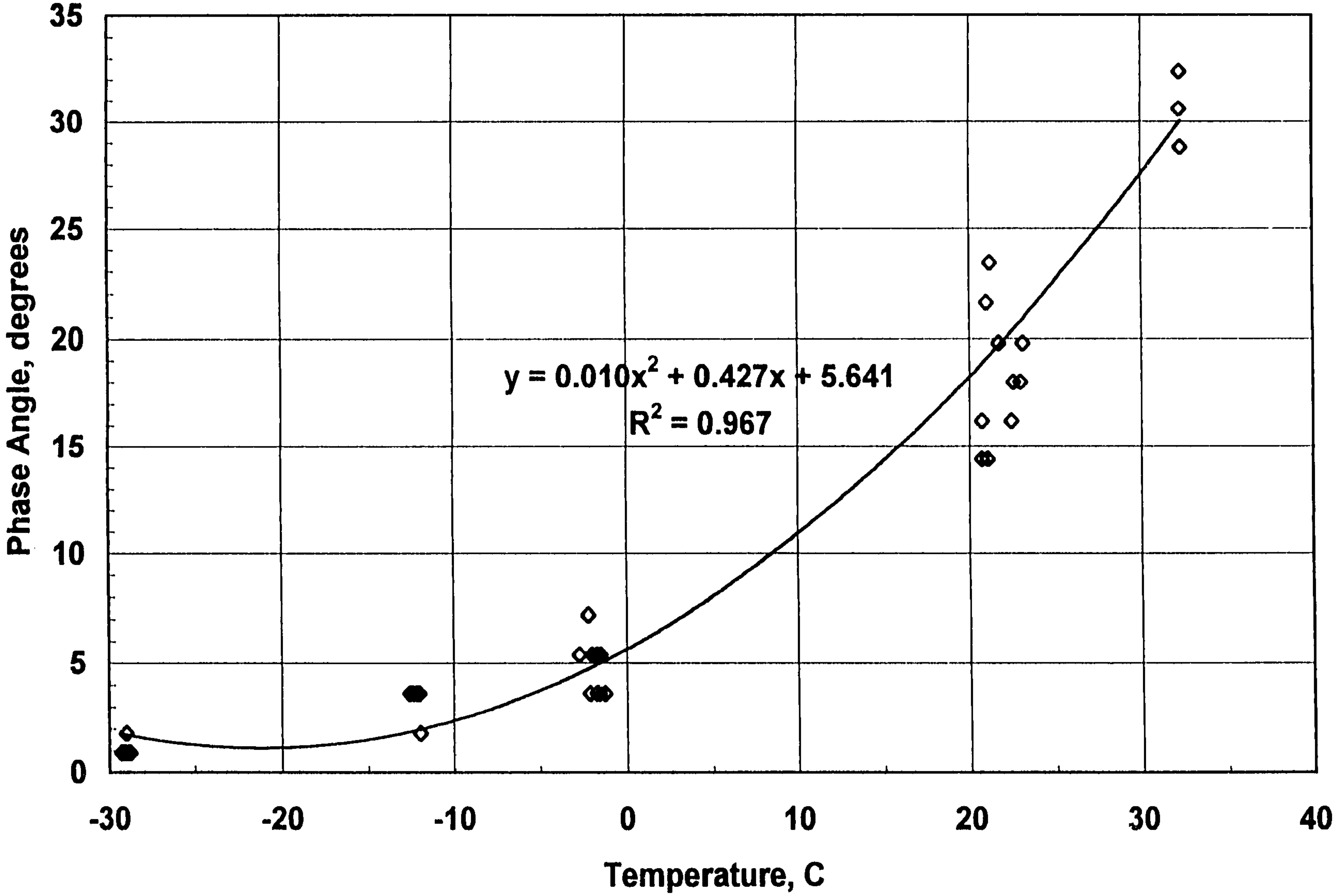


Figure 4.10 : Phase Angle Variation with Temperature for ARHM

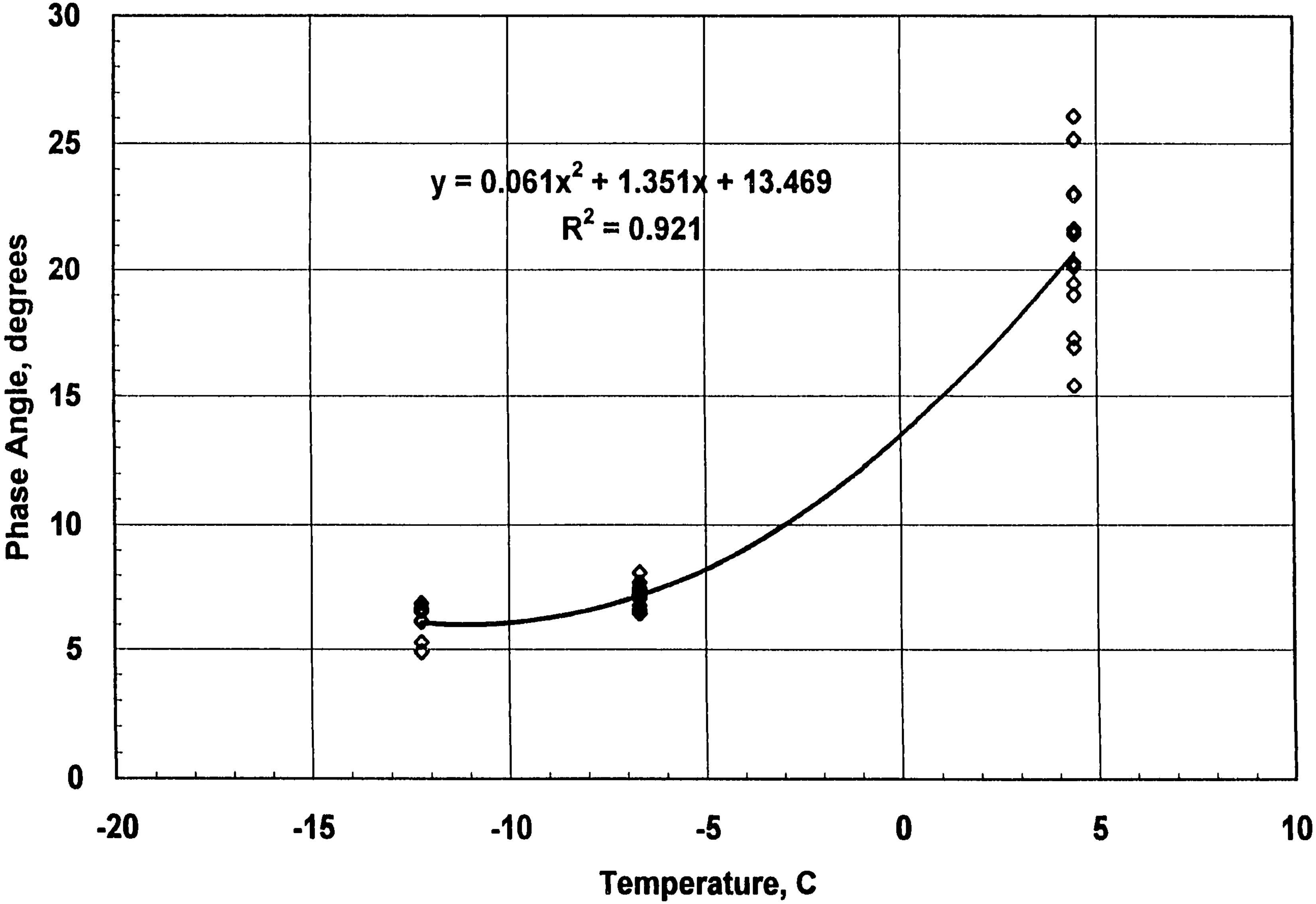


Figure 4.11 : Phase Angle Variation with Temperature for AC-5 Mix

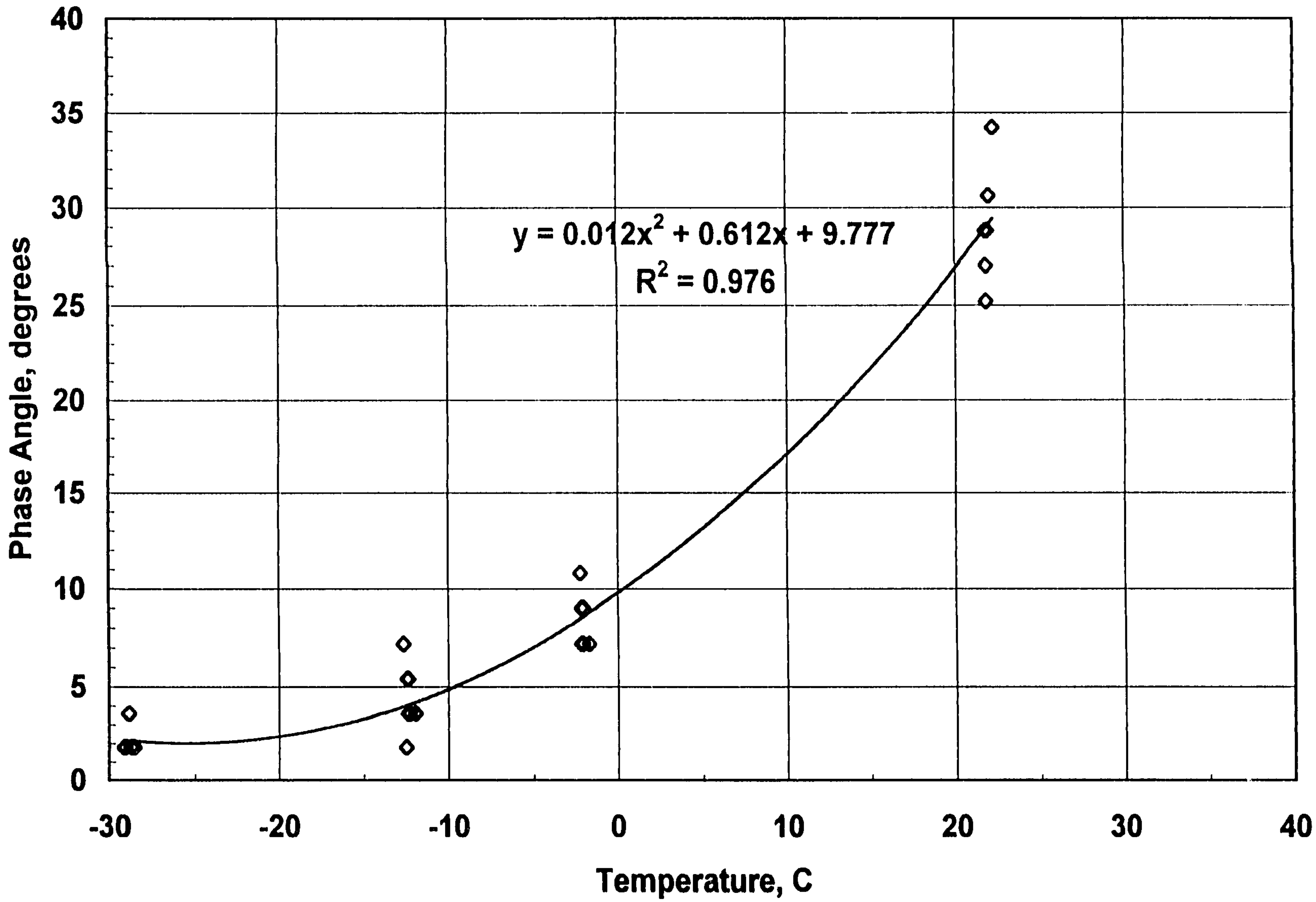


Figure 4.12 : Phase Angle Variation with Temperature for ARC

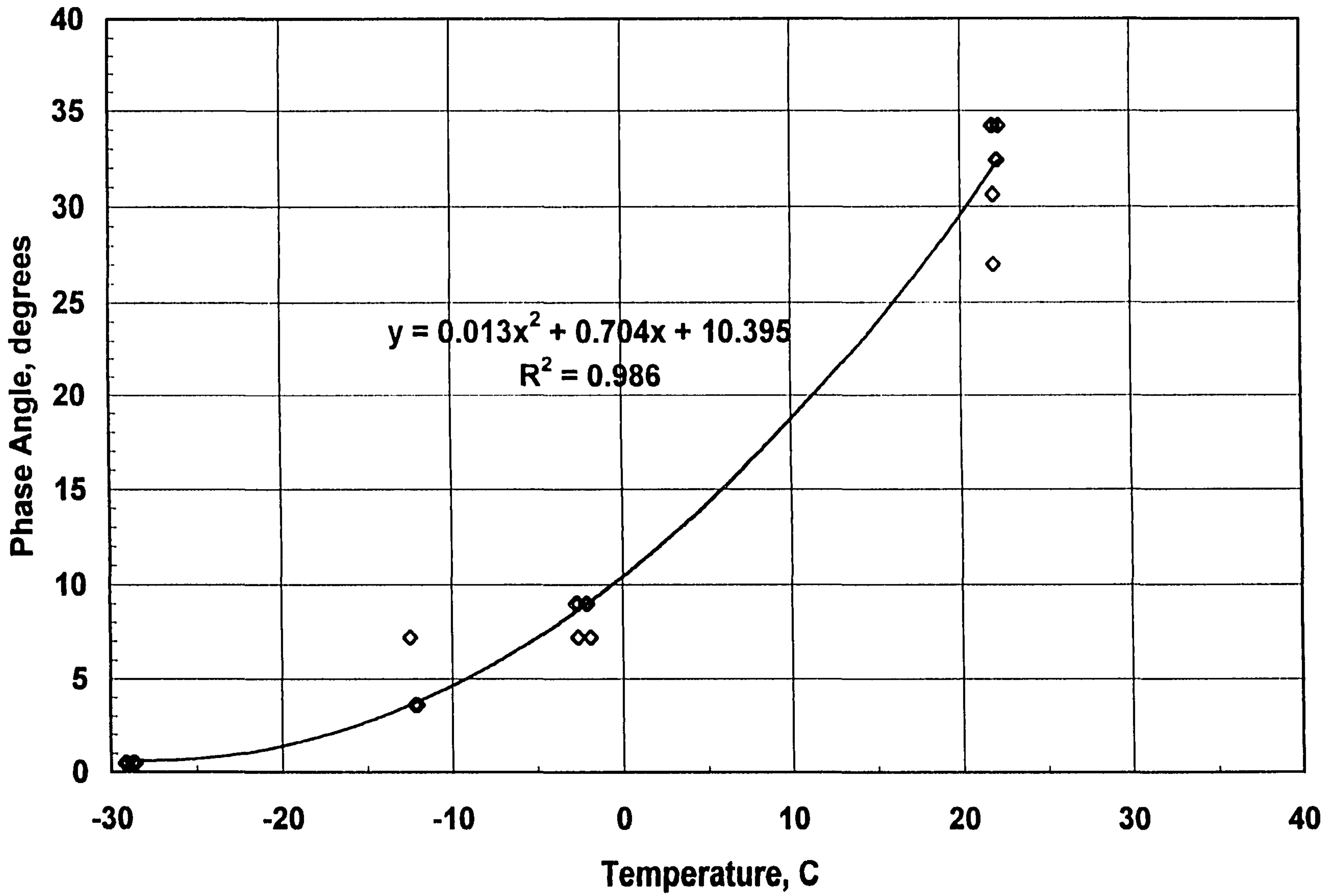


Figure 4.13 : Phase Angle Variation with Temperature for PlusRide

Table 4.5 : Coefficients for "Phase Angle - Temperature" Regressions

Mix Type	$\phi = a + b\,T + c\,T^2$			
	a	b	c	R^2
CAC-DG	4.162	4.255E-01	1.269E-02	0.970
ARHM-GG	5.641	4.275E-01	1.008E-02	0.967
AC-5	13.469	1.351E+00	6.096E-02	0.922
ARC	9.777	6.123E-01	1.206E-02	0.976
PlusRide	10.395	7.041E-01	1.267E-02	0.986

Note : ϕ = Phase Angle, degrees
T = Temperature, °C

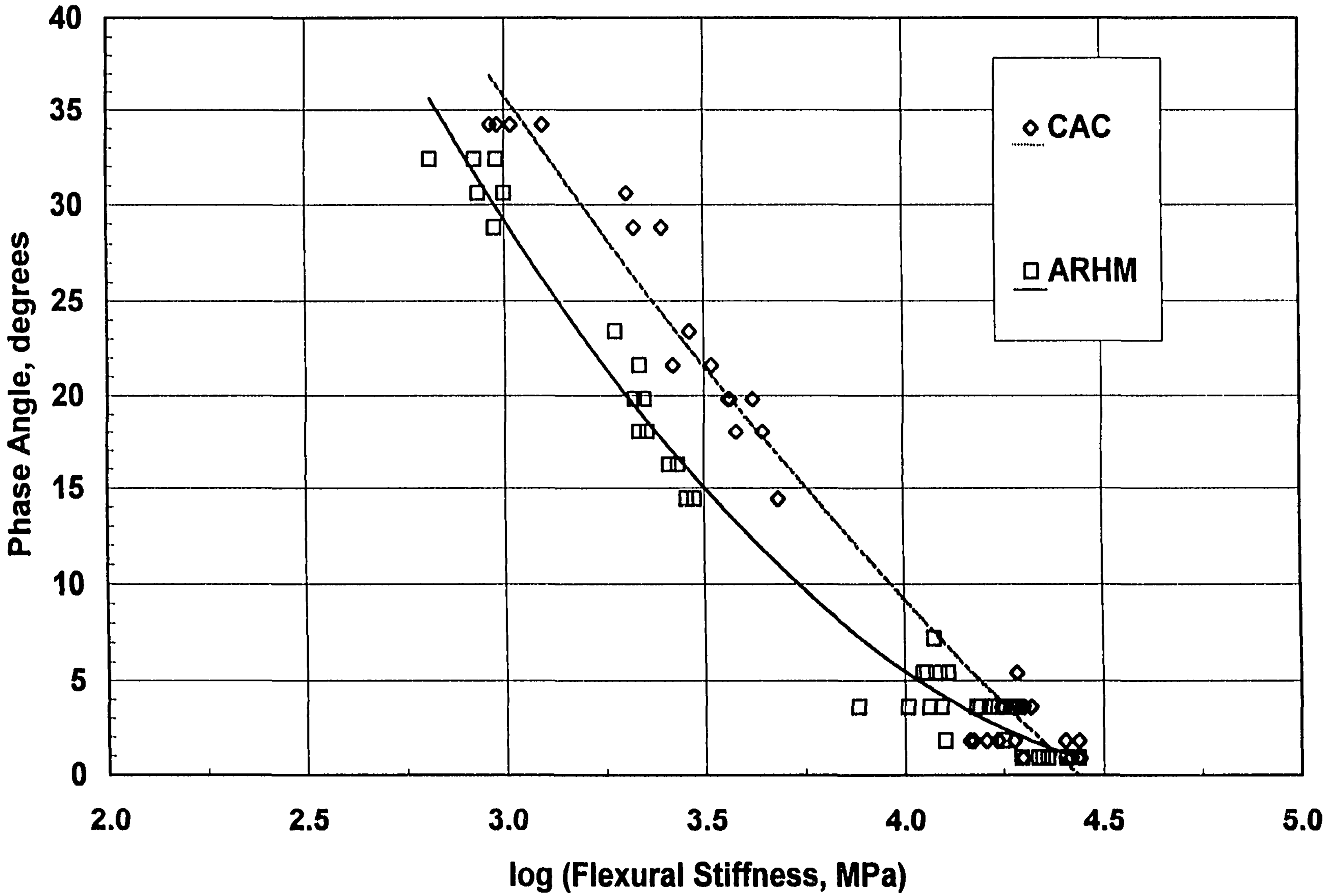


Figure 4.14 : Phase Angle Comparison for CAC and ARHM

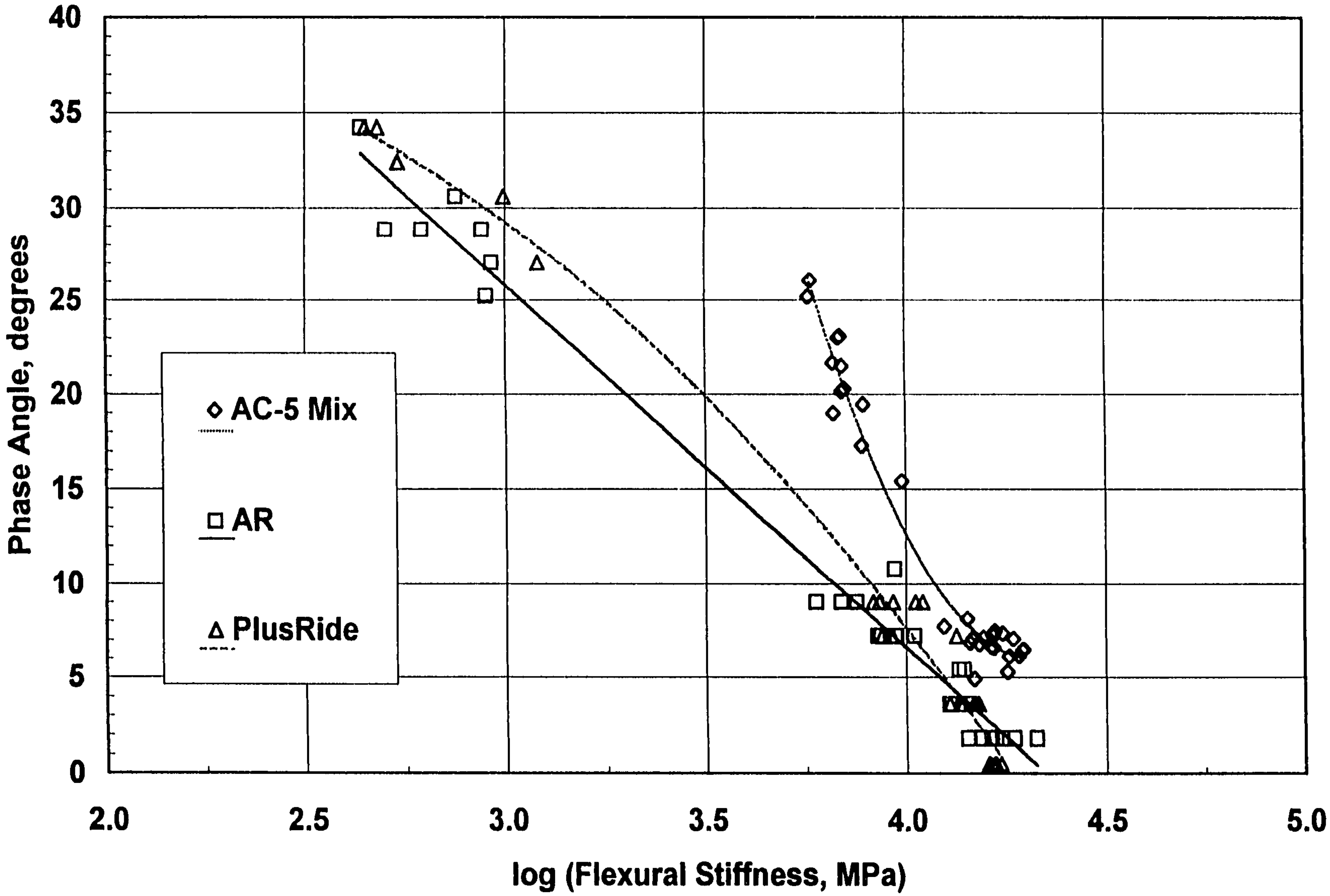


Figure 4.15 : Phase Angle Comparison for PR, ARC and AC-5 Mixes

Table 4.6 : Coefficients for "Phase Angle - Flexural Stiffness" Regressions

Mix Type	$\phi = a + b \log E_f + c (\log E_f)^2$			
	a	b	c	R^2
CAC-DG	160.523	-52.861	3.760	0.974
ARHM-GG	210.412	-87.919	9.174	0.983
AC-5	1103.698	-505.031	58.092	0.955
ARC	86.373	-20.896	0.238	0.983
PlusRide	23.627	19.469	-5.867	0.990

Note : ϕ = Phase Angle, degrees
E_f = Flexural Stiffness, MPa

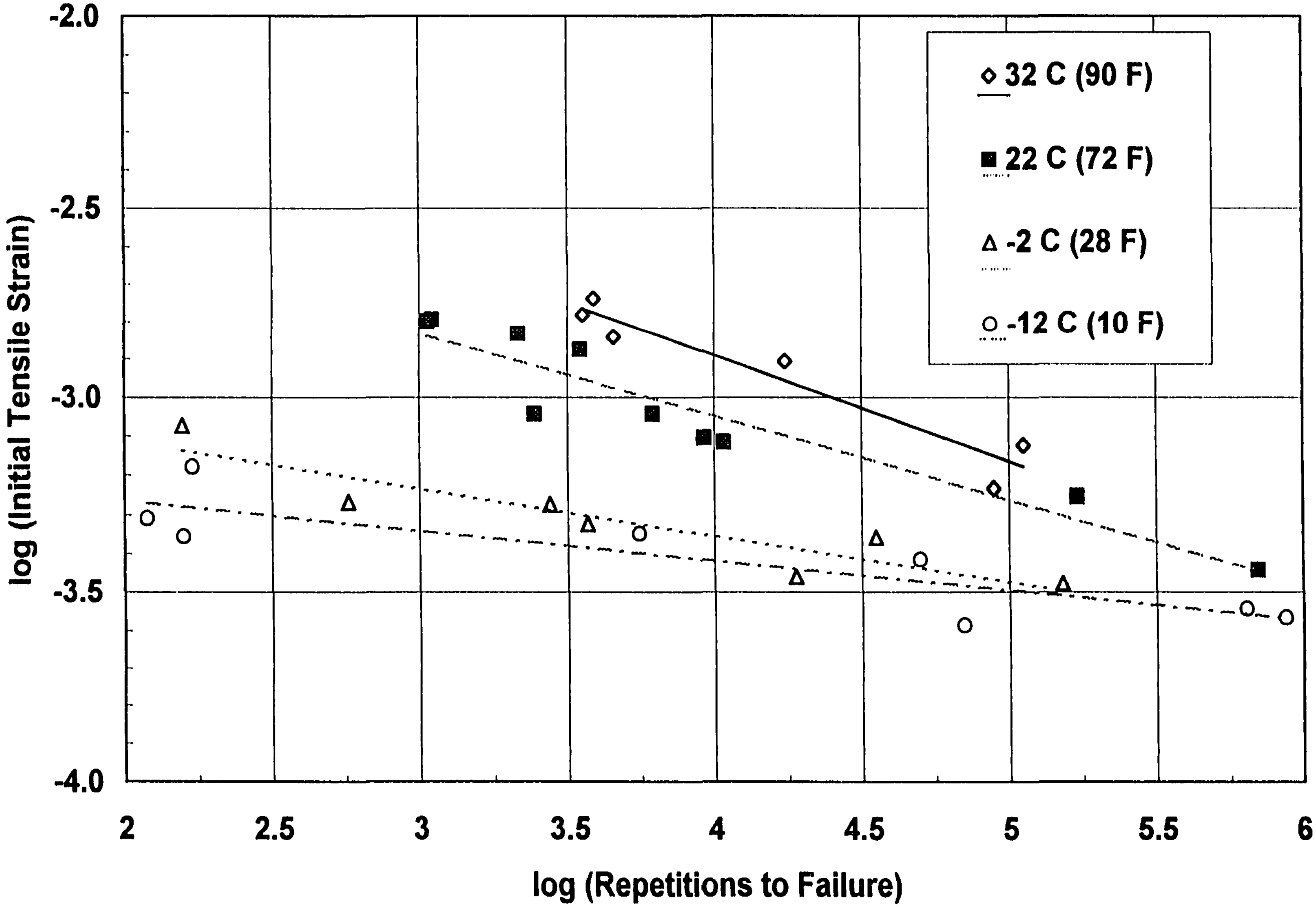


Figure 4.16 : Tensile Strain vs. Fatigue Life for CAC

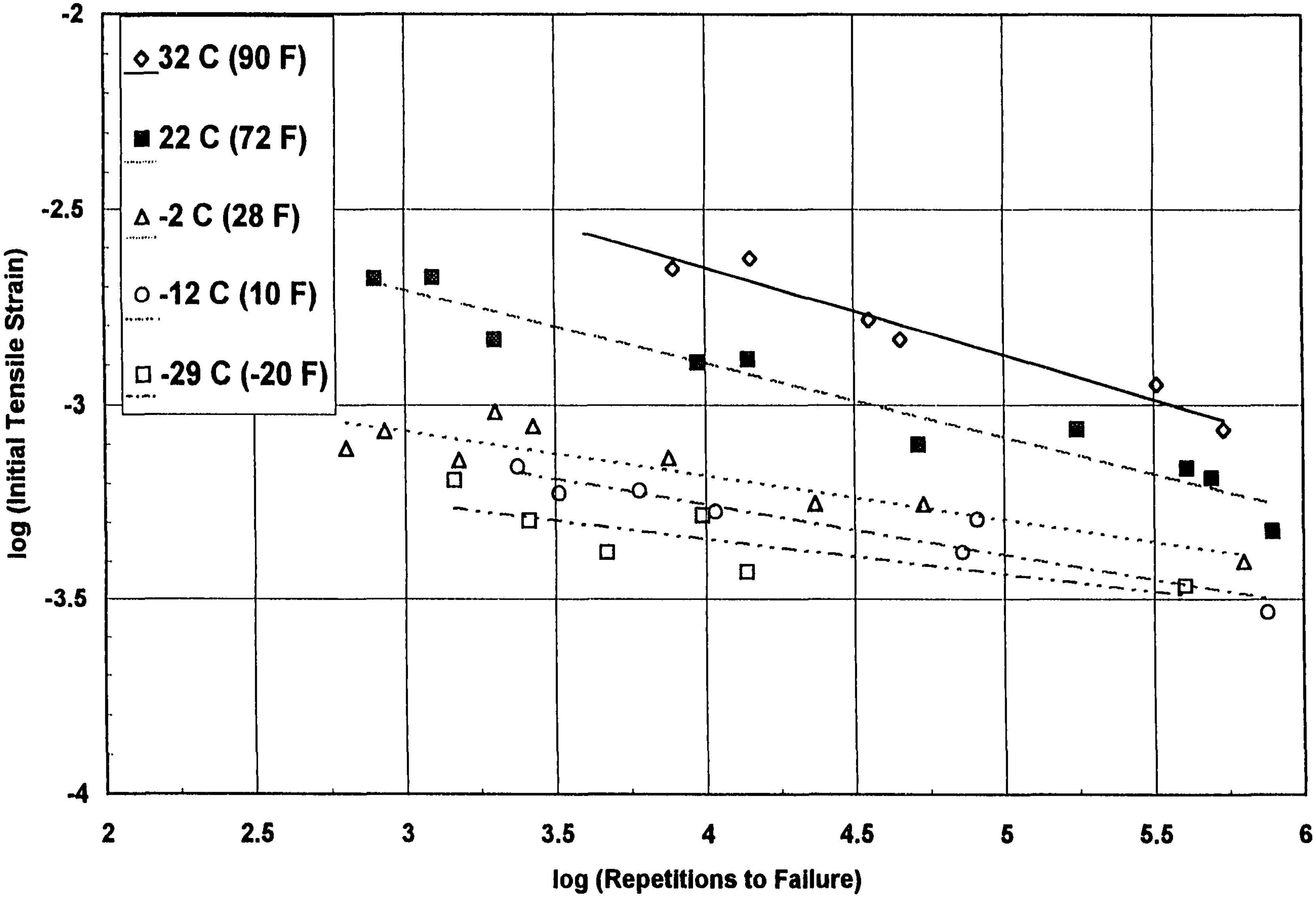


Figure 4.17 : Tensile Strain vs. Fatigue Life for ARHM

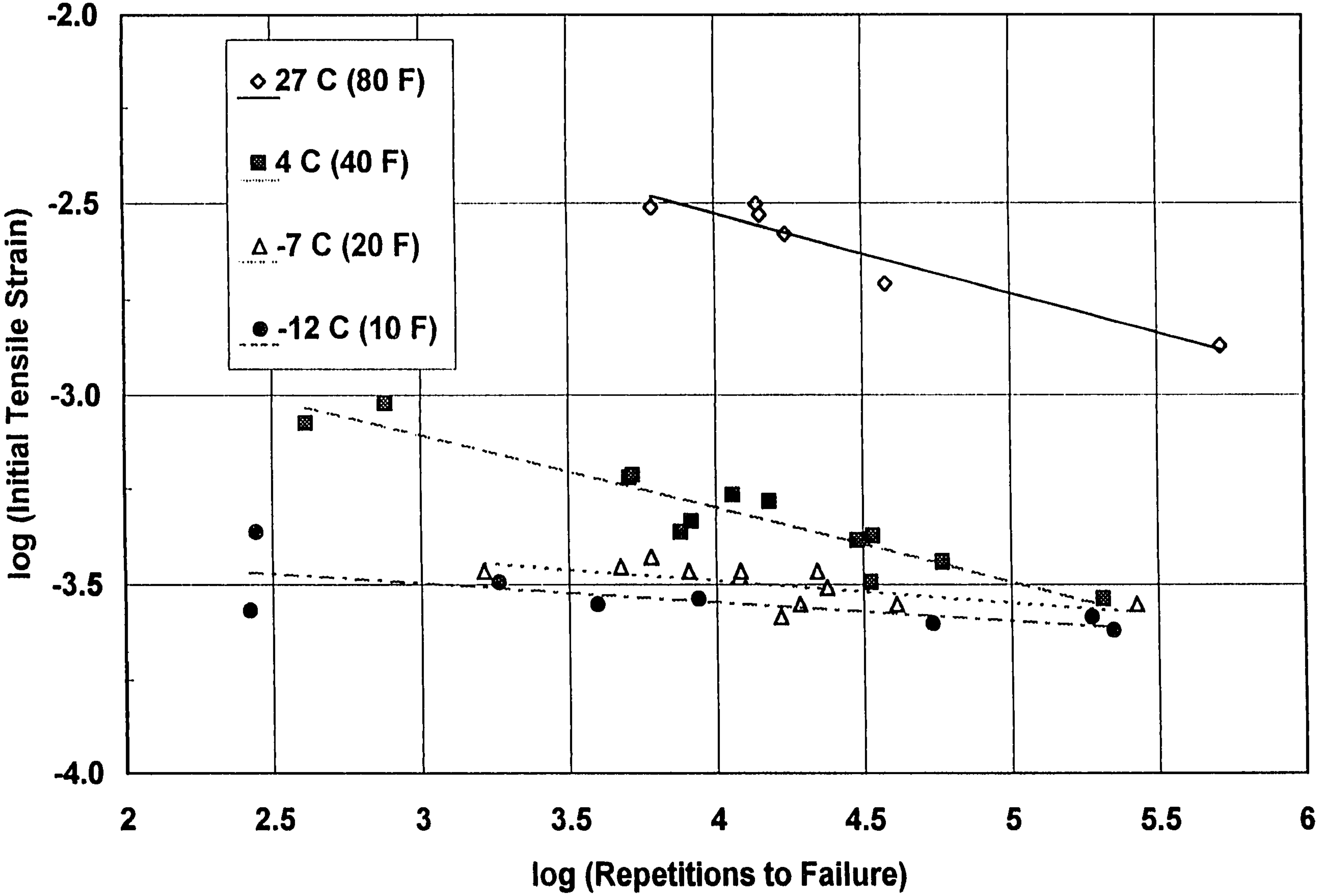


Figure 4.18 : Tensile Strain vs. Fatigue Life for AC-5 Mix

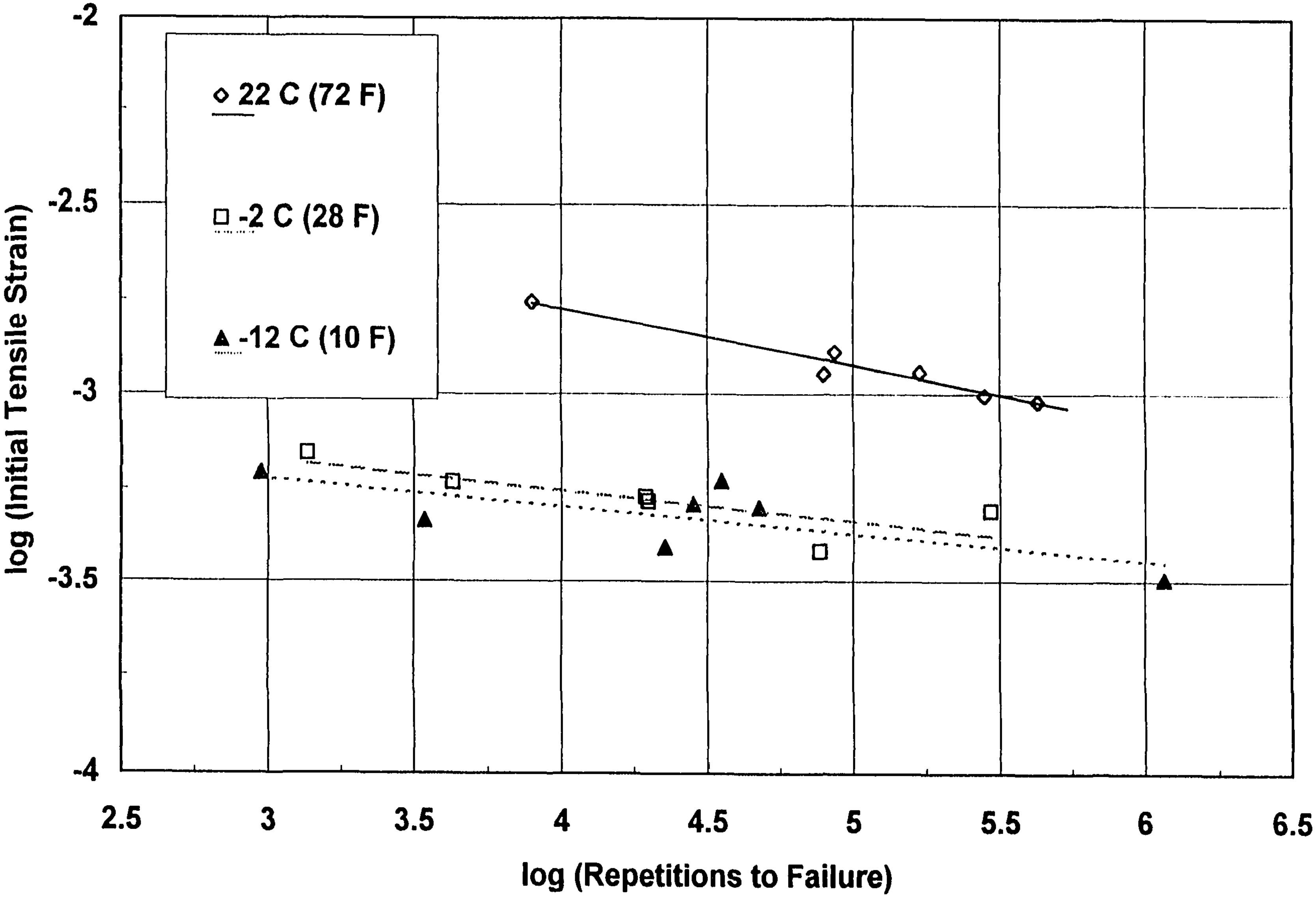


Figure 4.19 : Tensile Strain vs. Fatigue Life for ARC

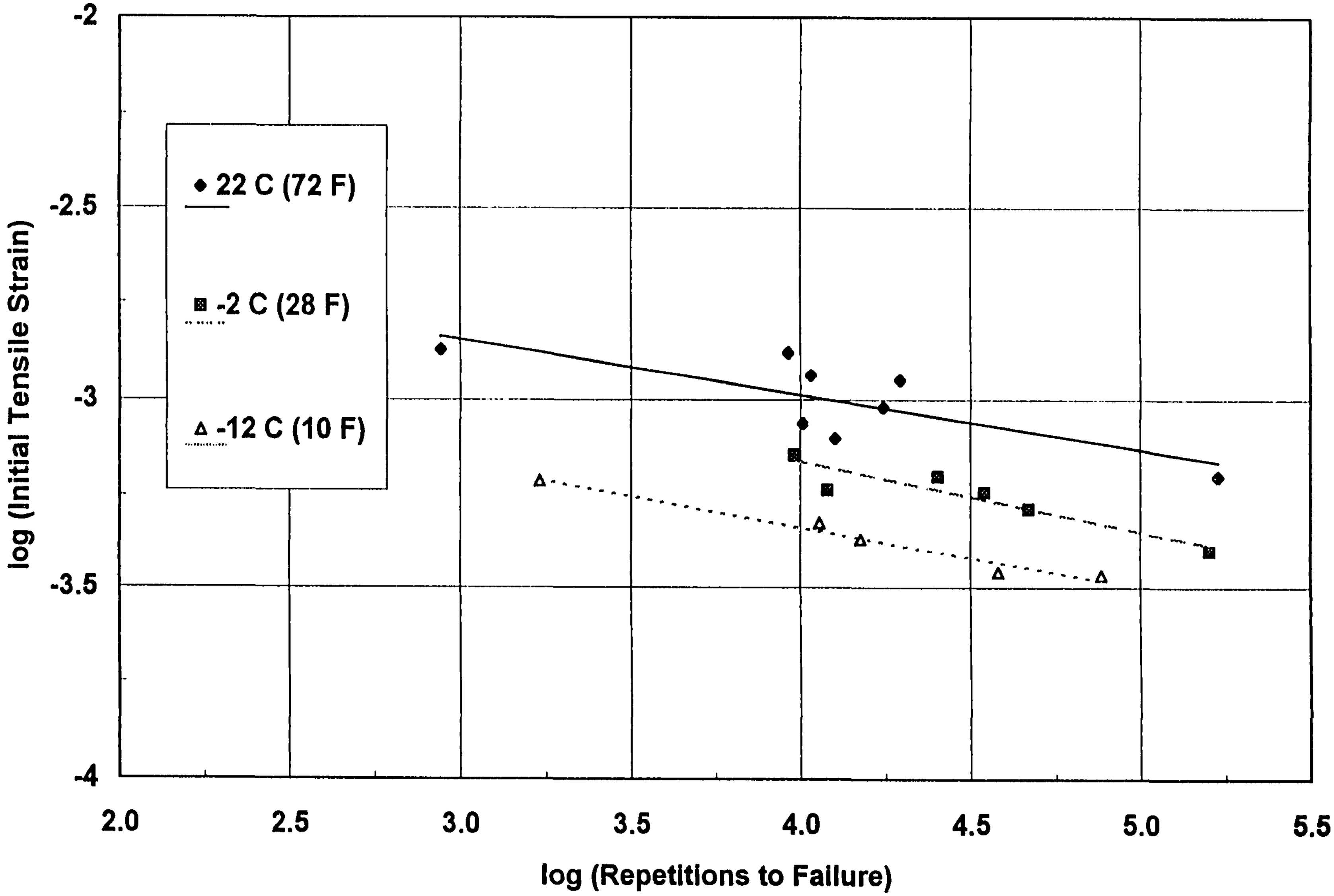


Figure 4.20 : Tensile Strain vs. Fatigue Life for PlusRide

Table 4.7: Coefficients for "Initial Tensile Strain-Fatigue Life" Regressions

		$N_f = a\ (1/\varepsilon)^b$		
Mix	T°C (°F)	a	b	R^2
CAC-DG	32.2 (90)	2.578E-06	3.323	0.918
	22.2 (72)	2.252E-09	4.147	0.893
	-2.2 (28)	3.158E-20	6.993	0.838
	-12.2 (10)	2.064E-30	9.852	0.761
ARHM-GG	32.2 (90)	7.106E-08	4.220	0.945
	22.2 (72)	3.085E-11	5.022	0.941
	-2.2 (28)	4.320E-20	7.342	0.828
	-12.2 (10)	4.512E-19	6.881	0.897
	-28.9 (-20)	3.235E-19	6.733	0.635
AC-5	26.7 (80)	5.742E-08	4.462	0.920
	4.4 (40)	9.352E-12	4.554	0.883
	-6.7 (20)	2.326E-21	7.085	0.405
	-12.2 (10)	4.522E-33	10.230	0.501
ARC	22.2 (72)	8.808E-14	6.170	0.947
	-2.2 (28)	4.761E-22	7.812	0.637
	-12.2 (10)	2.596E-19	6.910	0.503
PlusRide	22.2 (72)	3.102E-06	3.147	0.720
	-2.2 (28)	7.766E-11	4.474	0.740
	-12.2 (10)	4.085E-16	5.816	0.966

N_f = Repetitions to Failure (Fatigue Life)

ε = Initial Tensile Strain, m/m

Table 4.8: Coefficients for "Fatigue Life-Strain-Stiffness" Regressions

	$N_f = c\,(1/\varepsilon)^d (1/E)^e$			
Mix	c	d	e	R^2
CAC-DG	6.084E-05	5.308	2.274	0.661
ARHM-GG	7.316E-05	5.678	2.456	0.828
AC-5	8.539E-02	5.577	3.446	0.606
ARC	1.282E-09	7.364	2.733	0.535
PlusRide	4.691E-05	3.349	0.612	0.563

N_f = Repetitions to Failure (Fatigue Life)

ε = Initial tensile Strain, m/m

E = Initial Flexural Stiffness, MPa

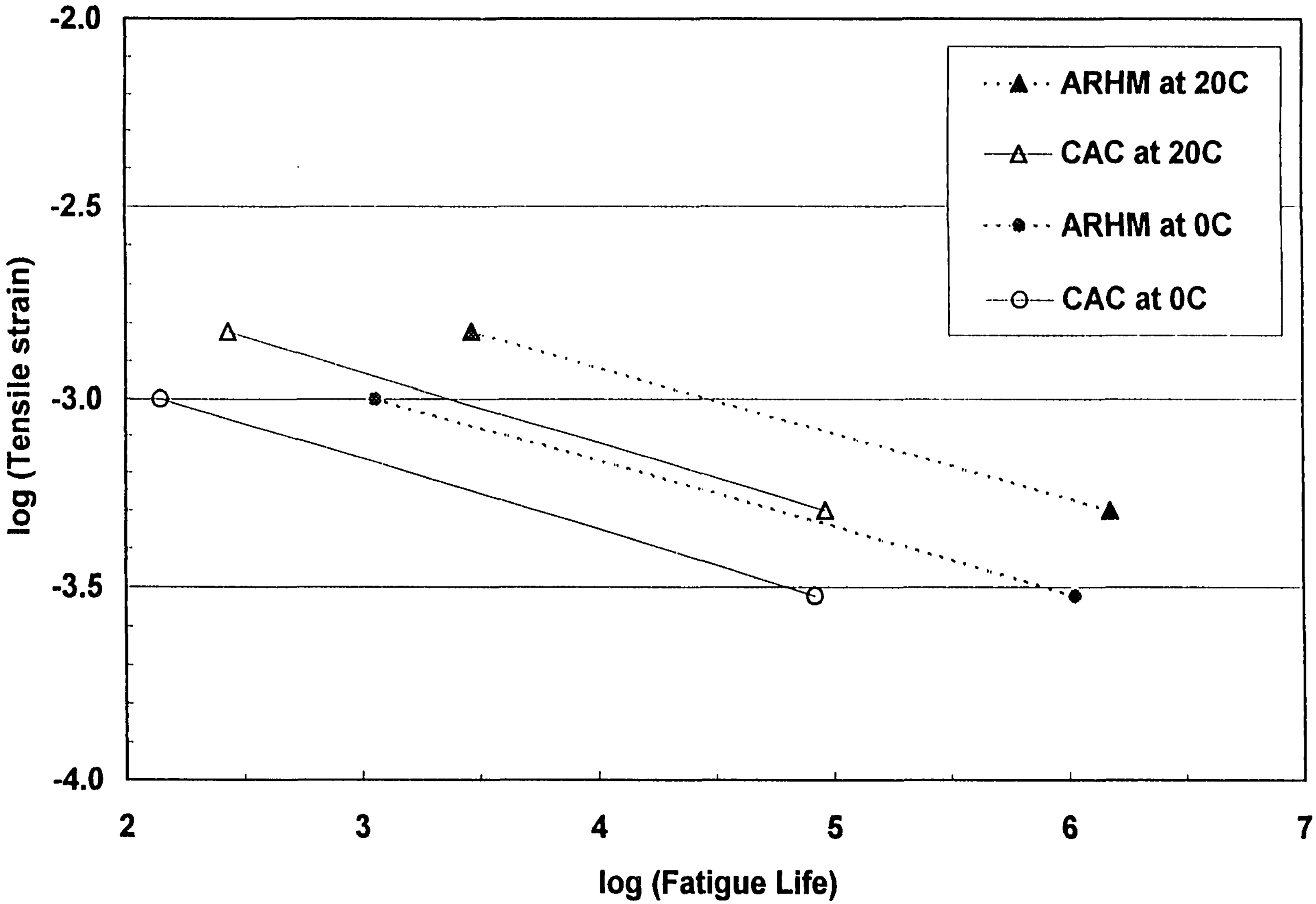


Figure 4.21 : Predicted Fatigue Life for CAC and ARHM at 0°C and 20°C

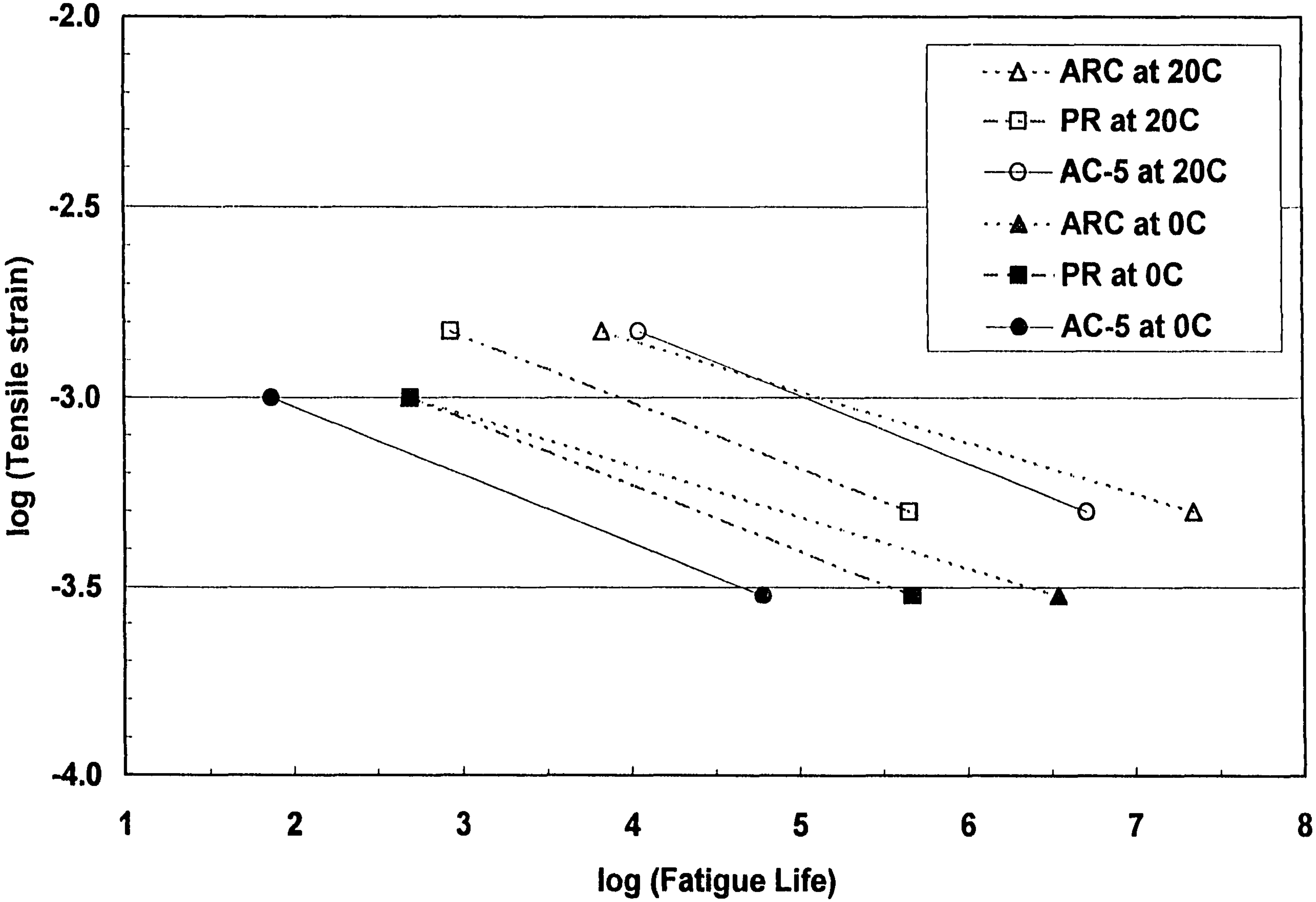


Figure 4.22 : Predicted Fatigue Life for AC-5, ARC and PR at 0°C and 20°C

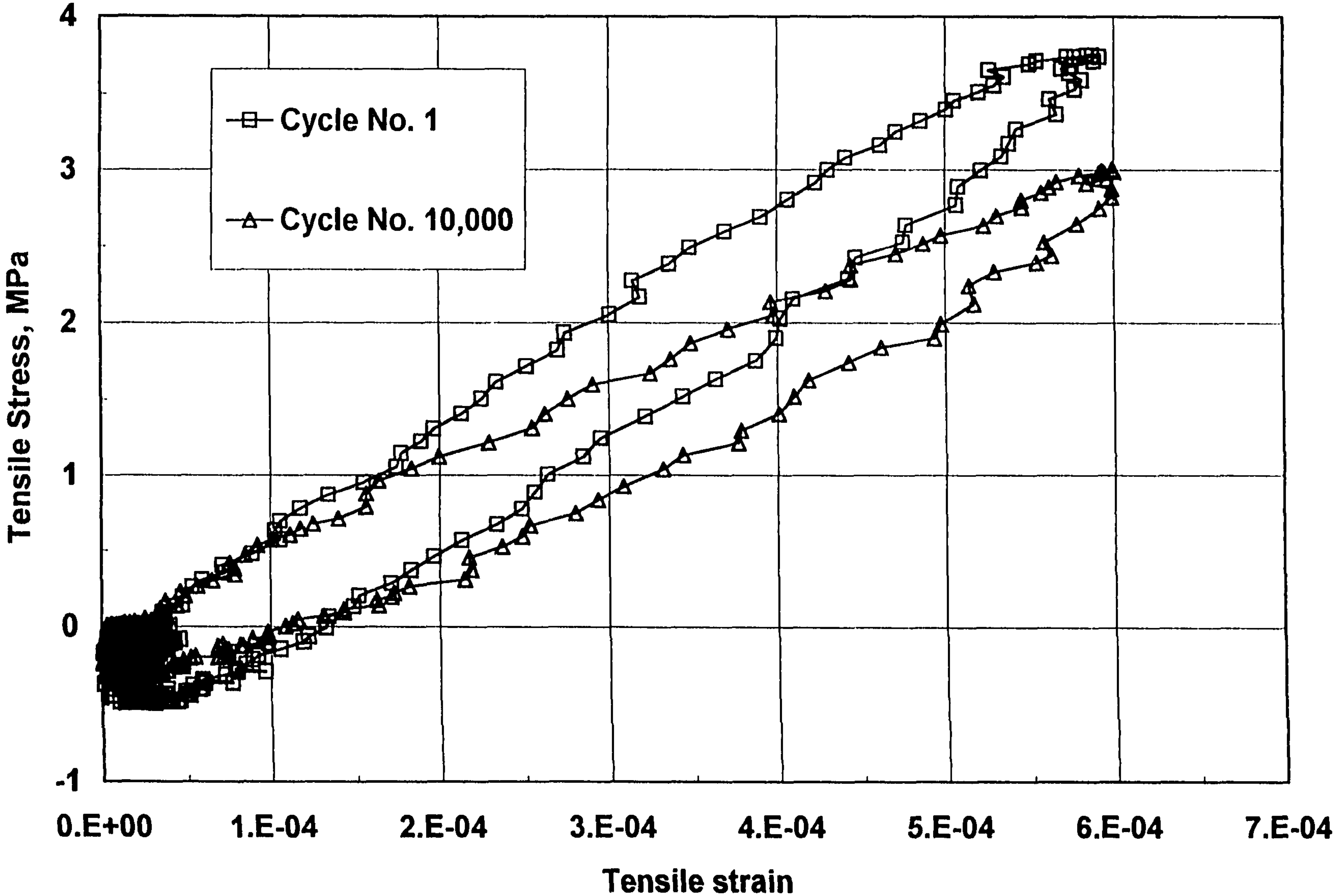


Figure 4.23 : Typical Hysterisis Loops at Different Cycles

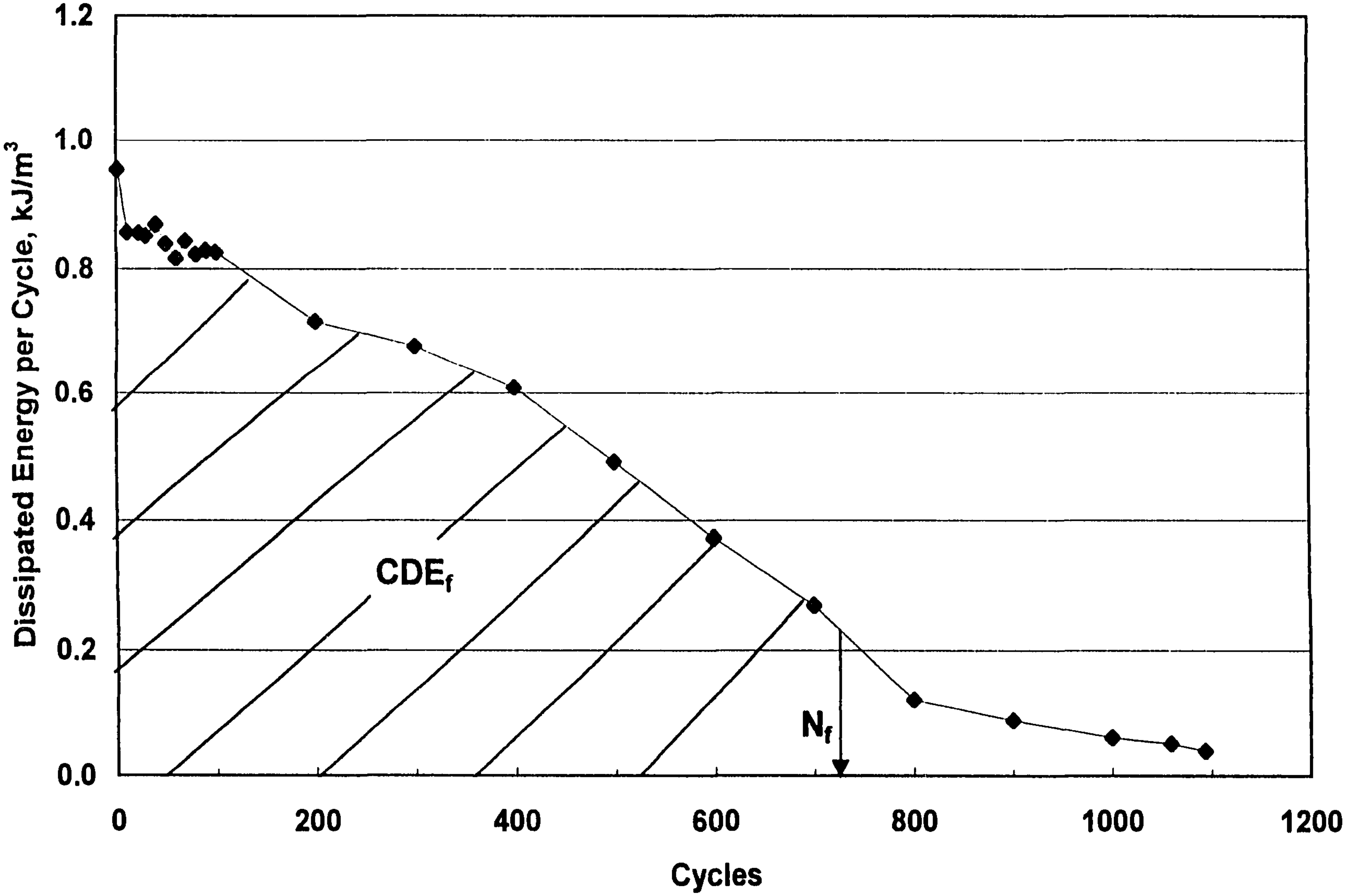


Figure 4.24 : Typical Dissipated Energy Variation with Load Repetitions

Table 4.9 : Coefficients for "Cumulative Dissipated Energy - Fatigue Life" Regressions

Mix	T°C (°F)	$CDE_f = A\,N_f^Z$		
		A	Z	R^2
CAC-DG	32.2 (90)	585.742	0.395	0.879
	22.2 (72)	62.682	0.599	0.966
	-2.2 (28)	5.110	0.650	0.873
	-12.2 (10)	0.243	0.814	0.948
ARHM-GG	32.2 (90)	60.208	0.645	0.926
	22.2 (72)	44.596	0.659	0.978
	-2.2 (28)	5.507	0.760	0.858
	-12.2 (10)	1.295	0.808	0.818
	-28.9 (-20)	0.925	0.772	0.953
AC-5	26.7 (80)	13.773	0.675	0.949
	4.4 (40)	4.154	0.789	0.928
	-6.7 (20)	1.351	0.850	0.959
	-12.2 (10)	0.740	0.863	0.985
ARC	22.2 (72)	116.076	0.528	0.978
	-2.2 (28)	4.063	0.694	0.965
	-12.2 (10)	2.446	0.652	0.995
	-28.9 (-20)	0.280	0.714	0.982
PlusRide	22.2 (72)	3.045	0.932	0.989
	-2.2 (28)	0.399	1.06	0.977
	-12.2 (10)	0.142	1.012	0.988
	-28.9 (-20)	0.095	0.961	0.923

CDE_f = Cumulative Dissipated Energy to Failure, kJ/m^3

N_f = Repetitions to Failure (Fatigue Life)

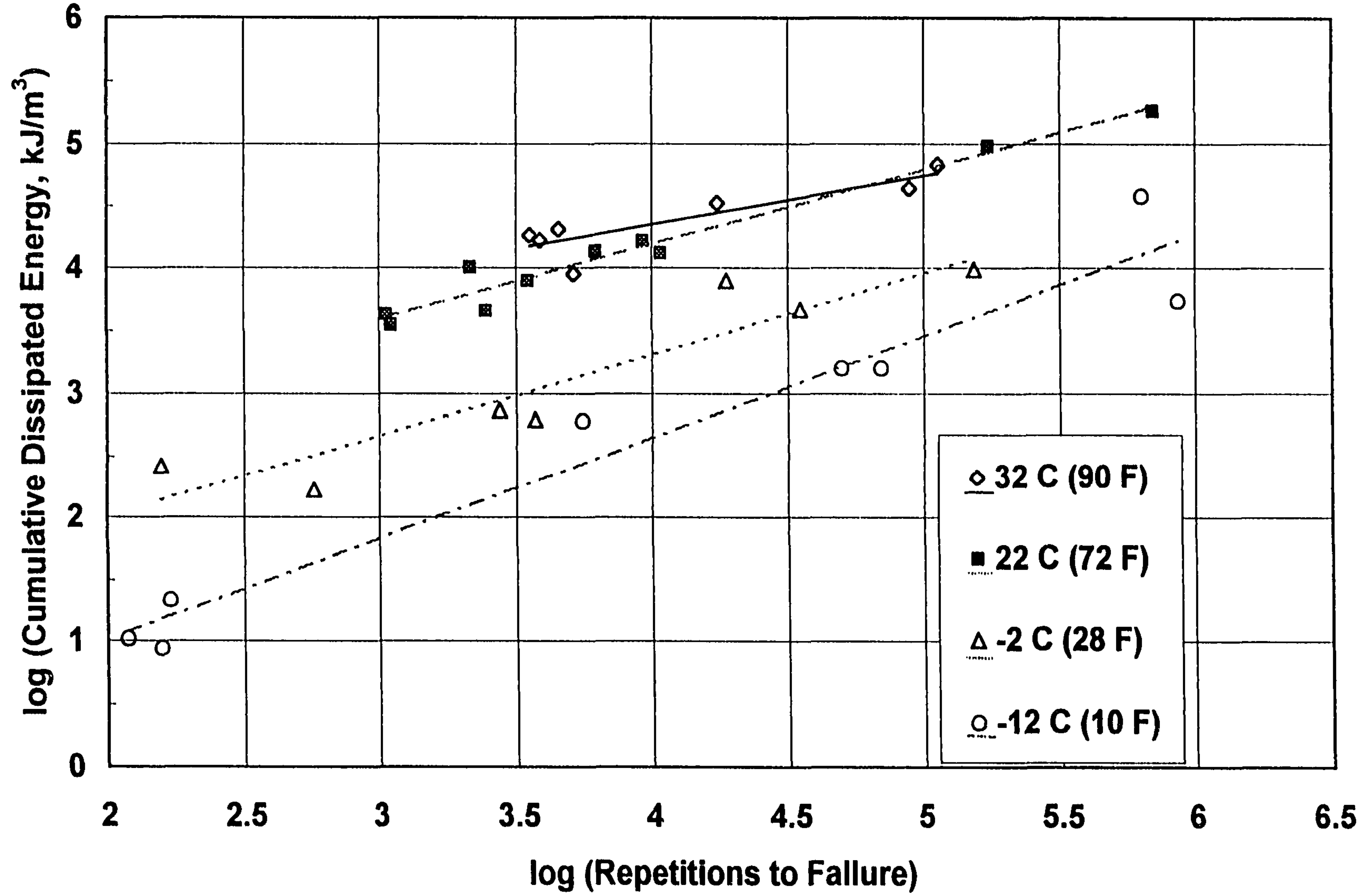


Figure 4.25 : Cumulative Dissipated Energy to Failure vs. Fatigue Life for CAC

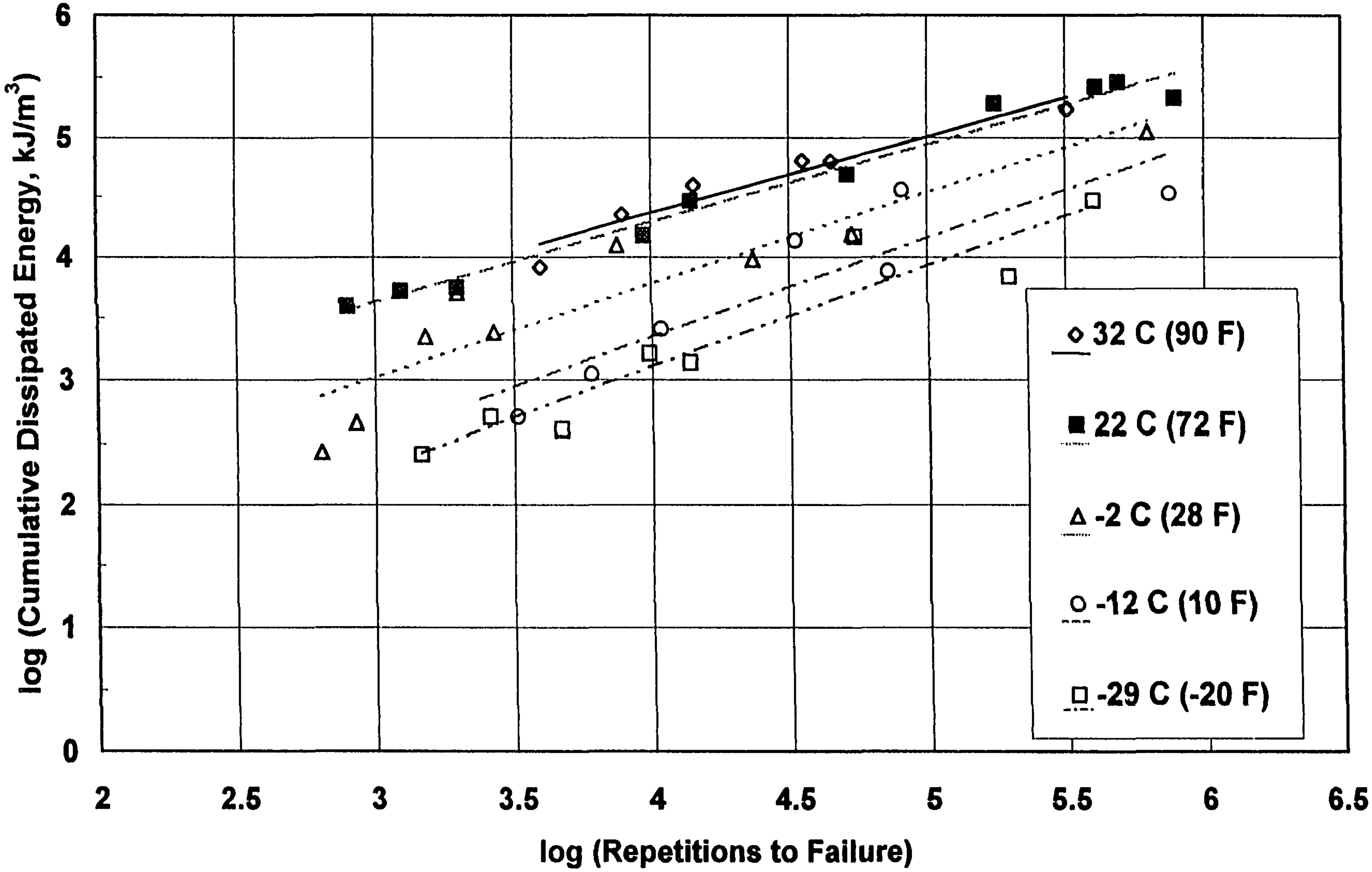


Figure 4.26 : Cumulative Dissipated Energy to Failure vs. Fatigue Life for ARHM

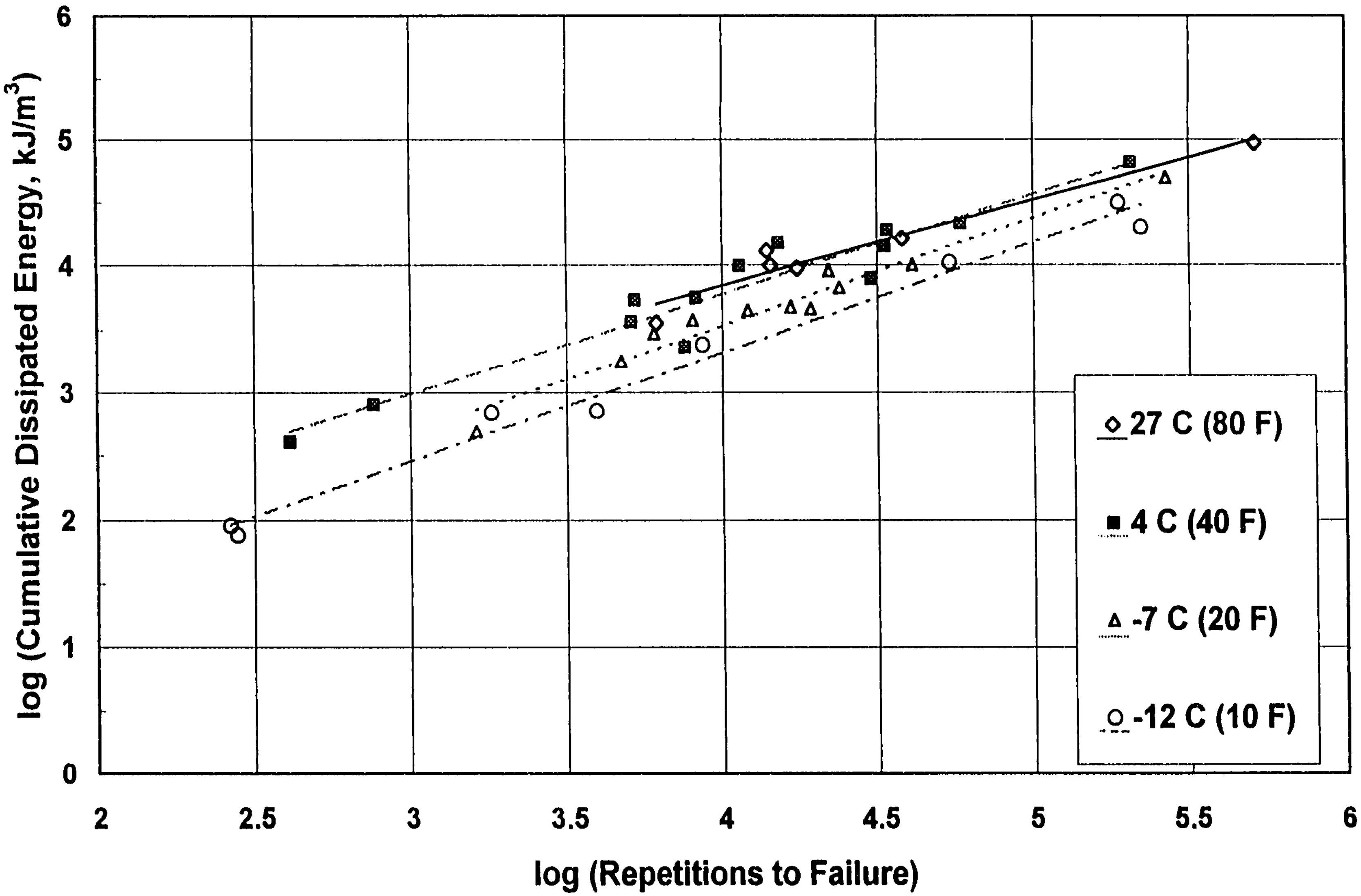


Figure 4.27 : Cumulative Dissipated Energy to Failure vs. Fatigue Life for AC-5 Mix

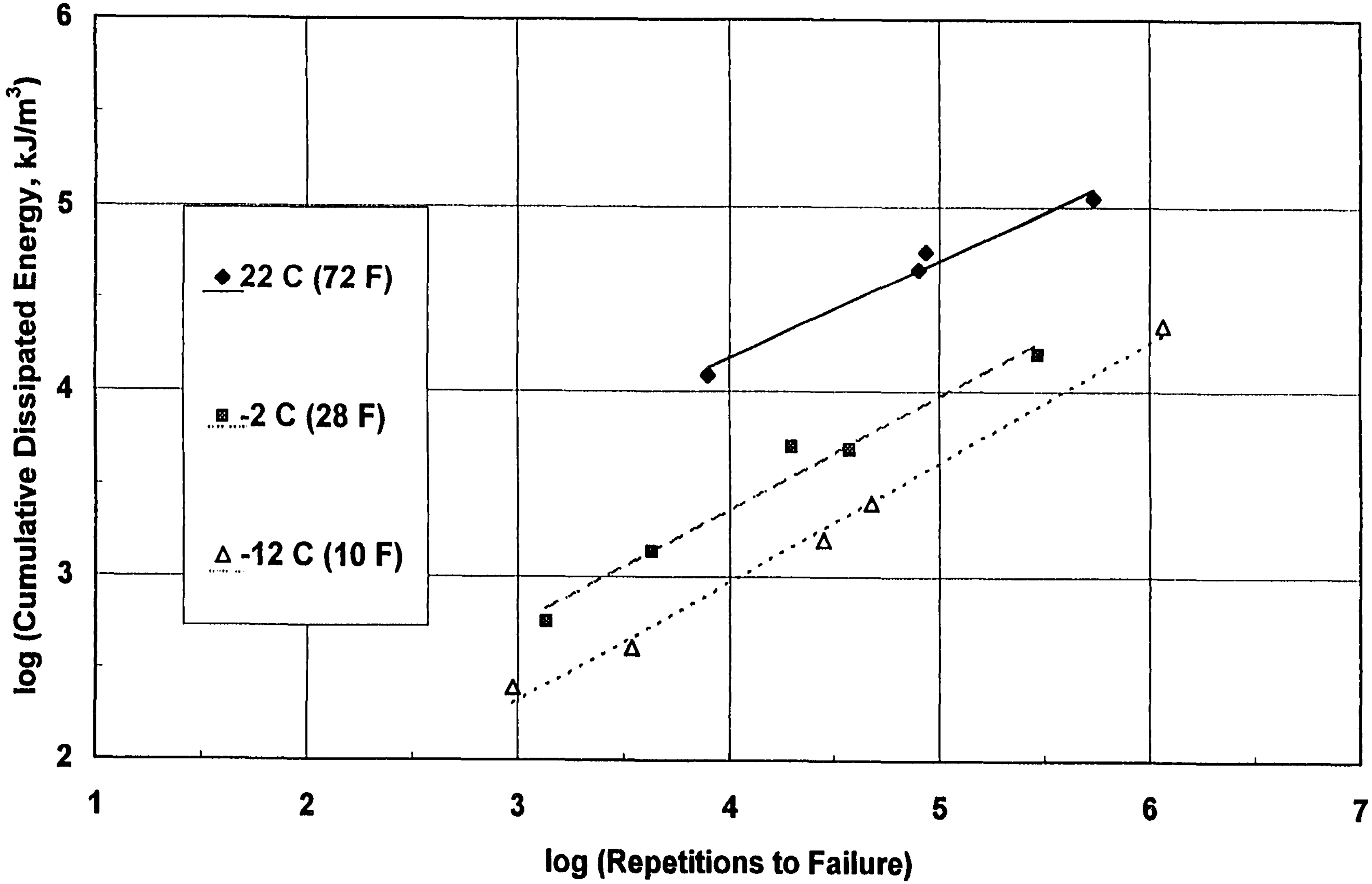


Figure 4.28 : Cumulative Dissipated Energy to Failure vs. Fatigue Life for ARC

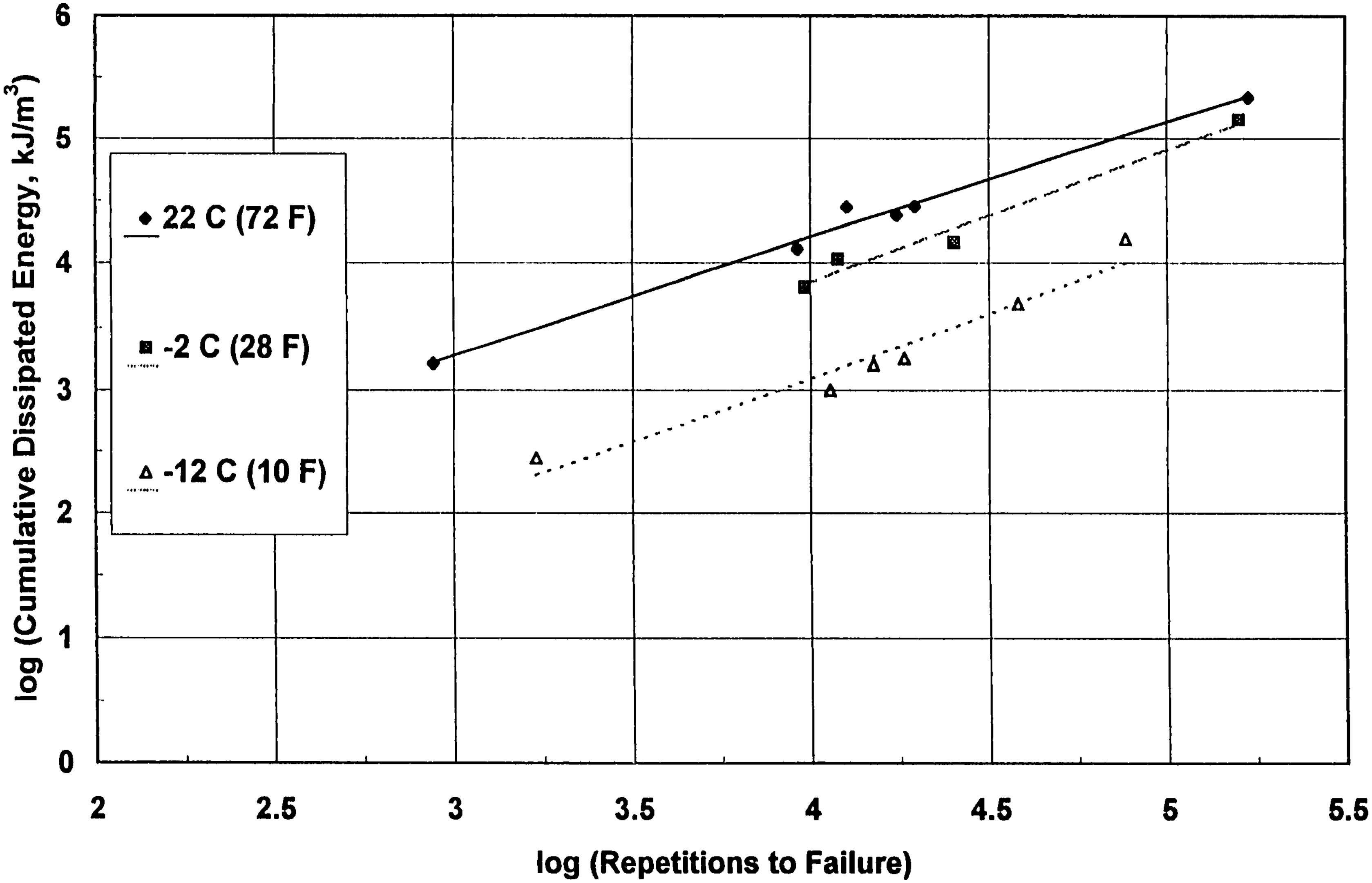


Figure 4.29 : Cumulative Dissipated Energy to Failure vs. Fatigue Life for PR

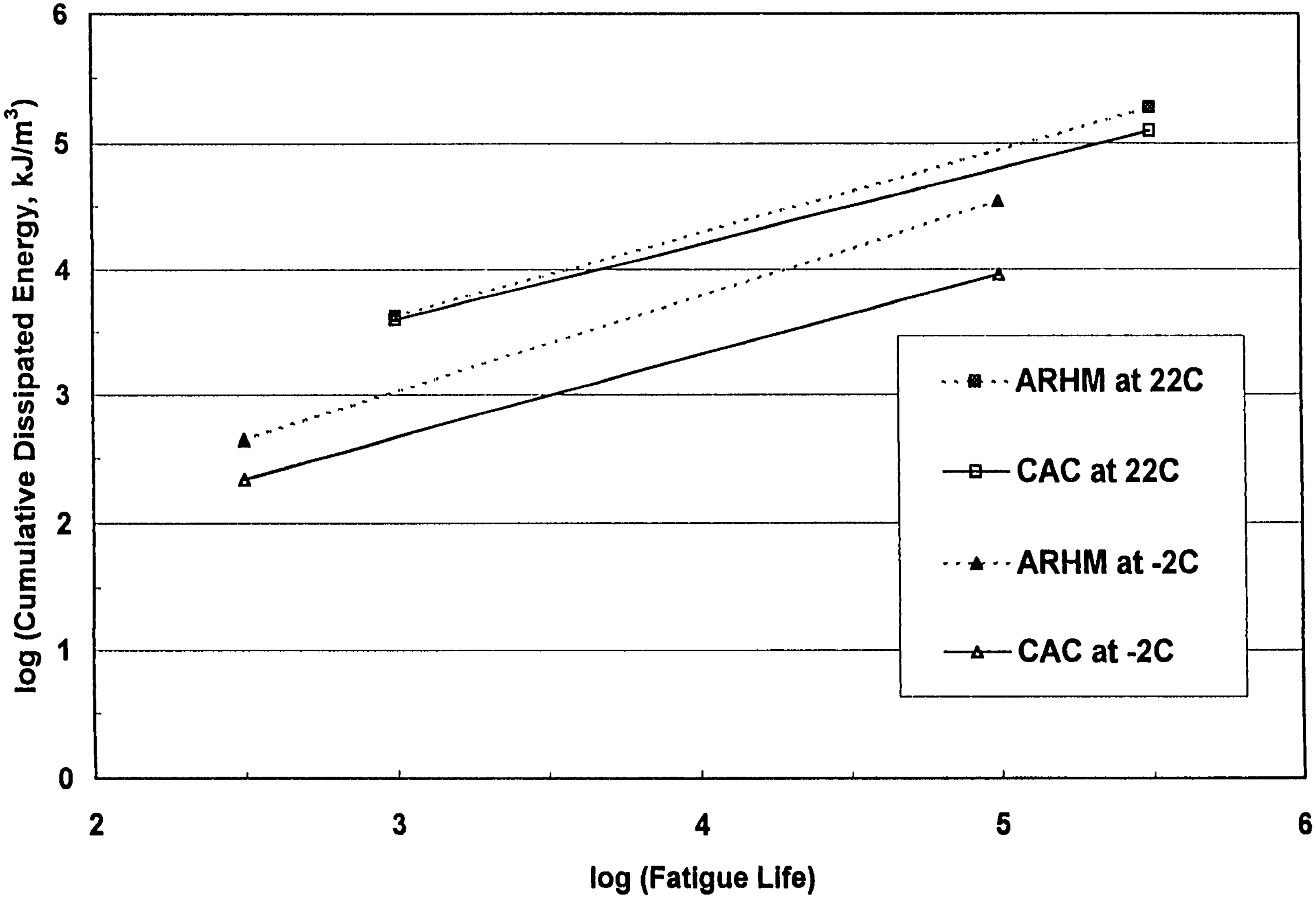


Figure 4.30 : Comparison of Dissipated Energy for CAC and ARHM

Table 4.10 : Coefficients for "Cumulative Dissipated Energy-Stiffness-Fatigue Life" Regressions

	$CDE_f = c \cdot E^d \cdot N_f^e$			
Mix	c	d	e	R^2
CAC-DG	6.081E+09	-1.314	0.704	0.891
ARHM-GG	4.883E+06	-0.845	0.709	0.895
AC-5	5.396E+01	-0.207	0.823	0.921
ARC	4.321E+05	-0.718	0.650	0.979
PlusRide	2.018E+05	-0.737	0.812	0.775

CDE_f = Cumulative Dissipated Energy to Failure, kJ/m^3

E = Initial Flexural Stiffness, kPa

N_f = Repetitions to Failure (Fatigue Life)

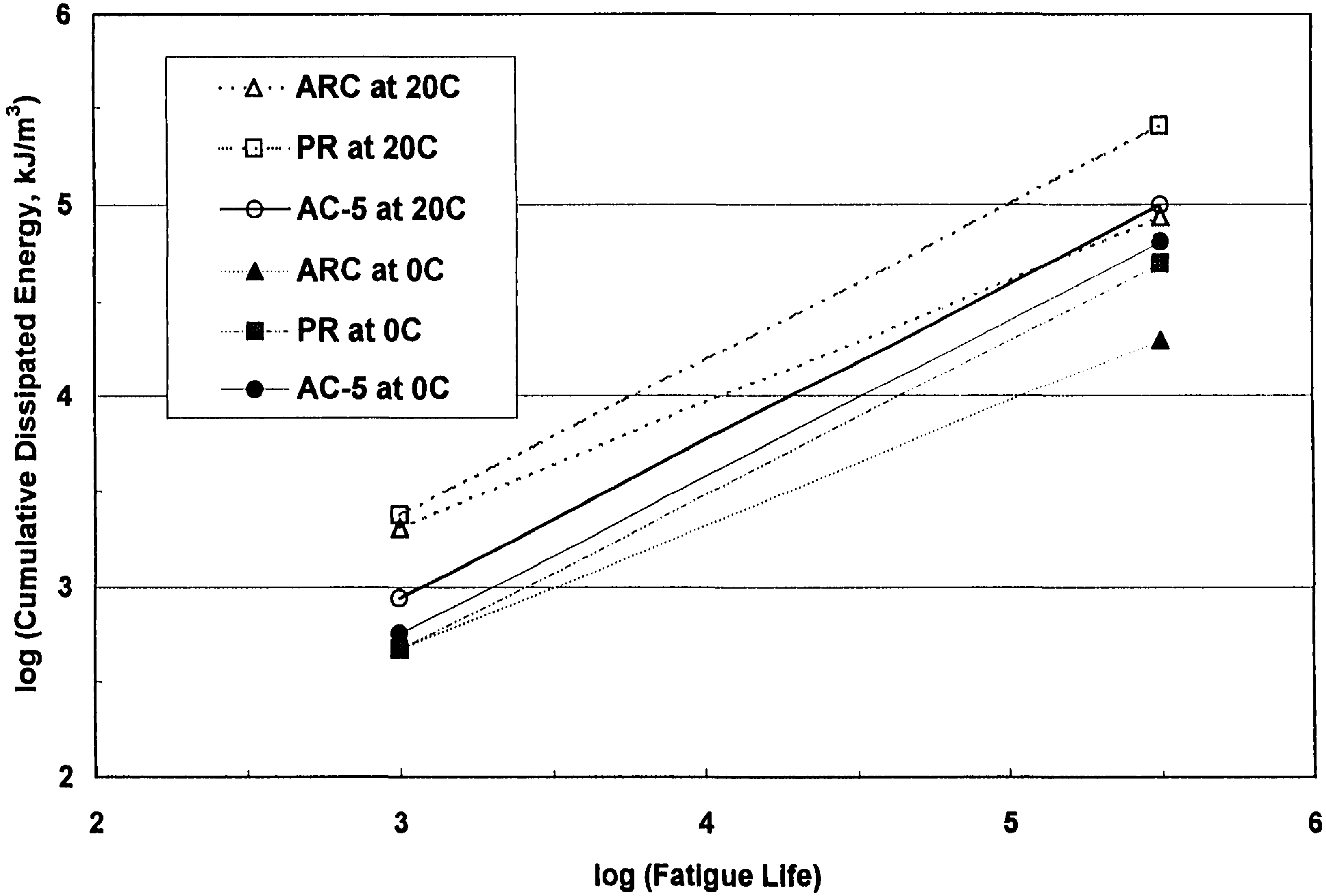


Figure 4.31 : Comparison of Dissipated Energy for ARC, PR and AC-5 Mixes

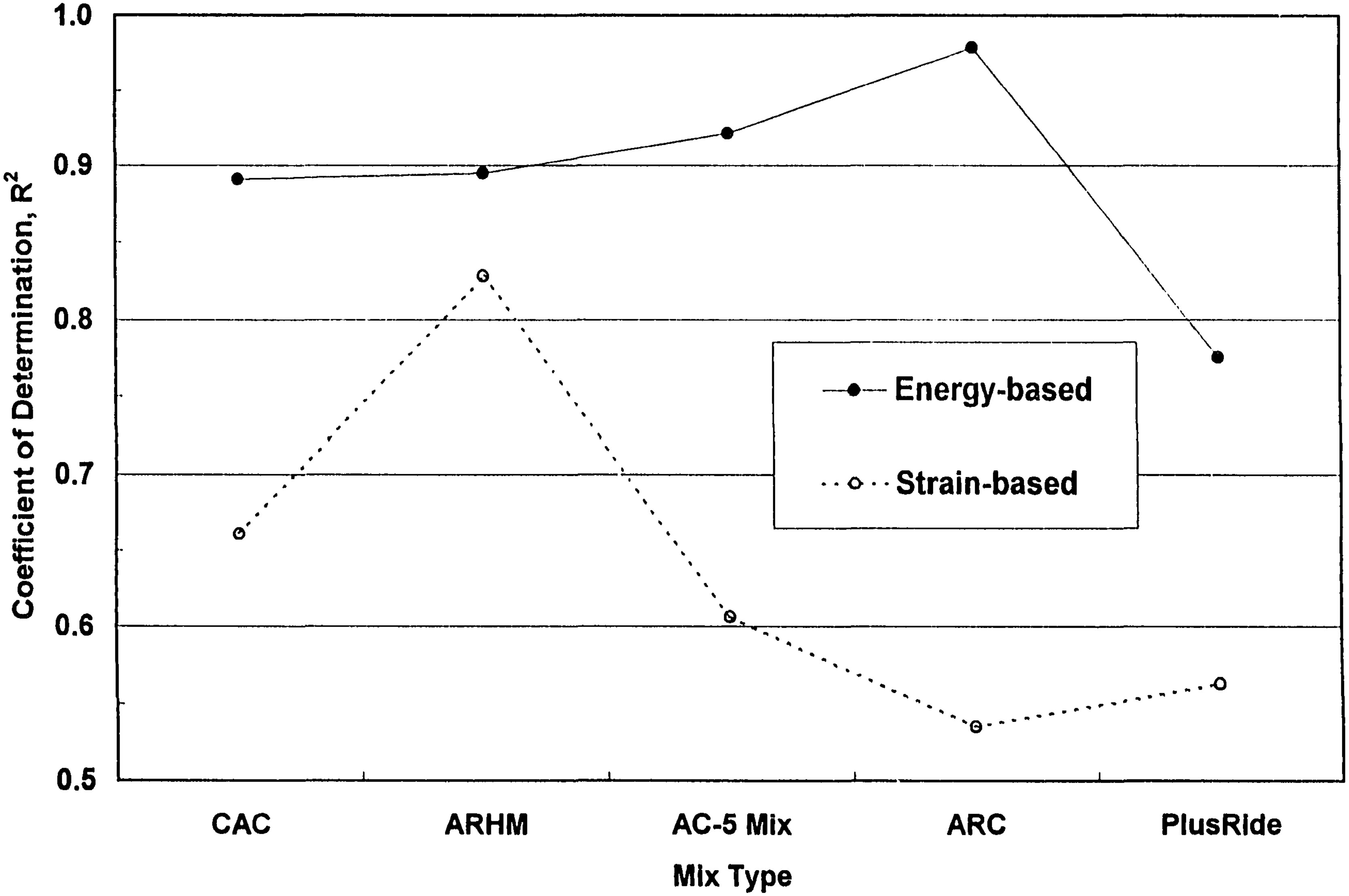


Figure 4.32 : Comparison of R^2 for Energy and Strain-Based Fatigue Equations

CHAPTER FIVE

MODE-OF-LOADING CONVERSION

5.1 Introduction

The relative fatigue performance of asphalt concrete in controlled-stress versus controlled-strain mode of loading has been the focus of a number of studies. As explained in Chapter 2, controlled-stress loading conditions are applicable to comparatively thick and stiff asphalt concrete layers, whereas the controlled-strain mode of loading is best suited for thinner, softer and more flexible asphalt concrete layers.

Furthermore, a controlled-strain test is easier to control in the laboratory than a controlled-stress test. During the latter, the accumulation of permanent strain is a concern, in addition to the possibility of damaging gages and equipment. It is therefore desirable to conduct controlled-strain tests where more reliable results are obtained.

The question remains, however, as to whether controlled-stress laboratory behavior can be predicted from controlled-strain test data. In this Chapter, an attempt is made to use controlled-strain fatigue test data for predicting controlled-stress behavior.

5.2 Mode-of-Loading Conversion: Type I

During a controlled-strain fatigue test, the load carrying capacity of a beam decreases with load repetitions due to the accumulation of fatigue damage within the specimen. The stiffness-ratio is one of the measures of this damage. This ratio is defined as the ratio of stiffness (E) at any repetition (N) to the initial stiffness (E_o), i.e. E/E_o. A typical stiffness-ratio decrease with load cycles is shown in Figure 5.1. A detailed examination of stiffness-ratio variation with cycles for all the specimens tested in this study revealed that ARHM beams tested at 22°C and 32°C (72°F and 90°F) had a variation which can be best represented as follows:

$$\frac{E}{E_0} = a \log N + 1 \qquad (5.1)$$

where: N = cycle number

a = experimentally determined regression coefficient.

The above variation is referred to as variation of Type I. Equation (5.1) plots as a straight line on a semi-log plot, as shown in Figure 5.1. It should be noted that at N=1 (first cycle), E/E_o is one.

Coefficient "a" in Equation (5.1) was determined for each specimen of Type I variation. Table 5.1 summarizes these values, in addition to the coefficients of determination (R^2) for Equation (5.1). Coefficient "a" is a measure of the rate at which stiffness decreases with load repetitions. This rate was found to be dependent on applied strain level. The relationship which best described the variation of "a" with strain level (ε_o) was found to be:

$$a = A\,\varepsilon_0 + B \qquad (5.2)$$

where: A and B = regression coefficients.

Figure 5.2 shows the variation of "a" with strain level, in addition to the regression coefficients A and B for ARHM at 22°C and 32°C. As seen in this figure, the absolute values of coefficient "a" for 32°C are smaller than those for 22°C, indicating a lower rate of stiffness decrease with cycles at 32°C. This explains the enhanced fatigue behavior associated with higher temperatures.

The damage induced in a beam specimen (87) tested in fatigue can be represented as:

$$D = \frac{E_0 - E}{E_0} = 1 - \frac{E}{E_0} \quad \text{or} \quad E = E_0(1 - D) \qquad (5.3)$$

where: D = damage due to fatigue

E_o = initial beam stiffness, and

E = beam stiffness at any cycle N.

It should be noted that at the start of a test, E is E_o, then damage, D, is zero. At failure, where E/E_o= 0.5, D is 0.5.

Replacing Equation (5.1) into (5.3) gives the controlled-strain loading damage associated with Type I variation:

$$D = 1 - (a \log N + 1) = -a \log N \tag{5.4}$$

The rate of increase of damage with cycles is given as the derivative of damage (D) with respect to load cycle (N):

$$\frac{dD}{dN} = \frac{-a}{N \ln 10} \tag{5.5}$$

Replacing coefficient "a" by its value from Equation (5.2) gives:

$$\frac{dD}{dN} = \frac{-(A\varepsilon_0 + B)}{N \ln 10} \tag{5.6}$$

Using the constitutive law, $\sigma = \varepsilon E$, and replacing the stiffness, E, by its value from Equation (5.3), the last equation becomes:

$$dD = \frac{\left(-A\dfrac{\sigma}{E_0(1-D)} - B\right)}{\ln 10}\frac{dN}{N} \tag{5.7}$$

or

$$dD = \left(\left(\frac{-A\sigma}{E_0 \ln 10}\right)\frac{1}{(1-D)} - \frac{B}{\ln 10}\right)\frac{dN}{N} \tag{5.8}$$

or

$$dD = \left(\frac{\alpha}{1-D} + \beta\right)\frac{dN}{N} \tag{5.9}$$

where: $\alpha = \dfrac{-A\sigma}{E_0 \ln 10}$, and $\beta = \dfrac{-B}{\ln 10}$

Rearranging Equation (5.9) gives:

$$\frac{(1-D)}{(\alpha + \beta - \beta D)} dD = \frac{dN}{N} \tag{5.10}$$

Integrating Equation (5.10) as follows:

$$\int_0^D \frac{(1-D')}{(\alpha+\beta-\beta D')} dD' = \int_1^N \frac{dN'}{N'} \qquad (5.11)$$

should yield a relationship between damage (D) and load cycle (N) for a controlled-stress loading of stress level σ.

The details of the integration are included in Appendix C, from which the following result is obtained:

$$\ln N = \frac{D}{\beta} + \frac{\alpha}{\beta^2} \ln\left(1 - \frac{\beta}{\alpha+\beta} D\right) \qquad (5.12)$$

where: D = damage = $1 - E/E_o$

N = cycle number

$\alpha = \dfrac{-A\sigma}{E_0 \ln 10}$, and $\beta = \dfrac{-B}{\ln 10}$

A and B = regression coefficients in Equation (5.2)

E_o = initial flexural stiffness, and

σ = stress level for controlled-stress loading.

Equation (5.12) gives the predicted variation of damage with cycles for the controlled-stress mode of loading. The corresponding controlled-strain damage variation is given by Equation (5.1).

5.3 Application of Type I Conversion

To illustrate the application of Equation (5.12), an ARHM specimen at 22°C (72°F) is used as an example. It is assumed that the initial strain level is 1000 microstrain (0.001 m/m). From Figure 5.2, coefficient "a" is determined at 22°C, for a strain level of 0.001 m/m as:

$$a = -58.409(0.001) - 0.0442 = -0.1026 \qquad (5.13)$$

According to Equation (5.1), the controlled-strain stiffness-ratio variation with cycles is therefore given as:

$$E/E_0 = -0.1026 \log N + 1 \qquad (5.14)$$

The initial flexural stiffness (E_o) at 22°C is predicted using Equation (4.7) and Table (4.1) as 2252 MPa. Therefore, the initial stress level for the controlled-stress mode is given as:

$$\sigma = E_0 \varepsilon = (2252\,\text{MPa})(0.001\,\text{m/m}) = 2.252\,\text{MPa} \qquad (5.15)$$

Using A and B coefficient values from Figure 5.2, α and β (Equation 5.12) are given as:

$$\alpha = \frac{-A\sigma}{E_0 \ln 10} = \frac{-(-58.409)\,2.252}{2252 \ln 10} = 2.537E-2 \qquad (5.16)$$

$$\beta = \frac{-B}{\ln 10} = \frac{-(-0.0442)}{\ln 10} = 1.920E-2 \qquad (5.17)$$

Replacing the values of α and β into Equation (5.12) gives:

$$\ln N = 52.083\,D + 68.821 \ln(1 - 0.431\,D) \qquad (5.18)$$

where: $D = 1 - E/E_0$

N = load cycle.

For a strain level of 0.001 m/m, Equations (5.14) and (5.18) are the pair of equations, which describes controlled-strain and controlled-stress behavior of ARHM at 22°C, respectively. For a different strain level, a different pair of equations will result.

Figure 5.3 shows the variation of stiffness-ratio (E/E_o) with cycles (N) for Equations (5.14) and (5.18). In this figure, the stiffness-ratio is plotted versus the logarithm of cycles, therefore the controlled-strain equation (5.14) is shown as a straight line. The controlled-stress equation (5.18) is seen to have a curved shape, with a rate of stiffness-ratio decrease faster than that of the controlled-strain line, as expected. Assuming that fatigue life is reached at E/E_o=0.5, Figure (5.3) can be used to determine fatigue life for both modes of loading. From this figure, the fatigue lives associated with controlled-strain and controlled-stress conditions are 74,622 and 11,491, respectively.

The above application is valid for a strain level of 0.001 m/m. For different strain levels, the above procedure can be repeated to give different fatigue lives for both modes of loading. Therefore, a strain-based fatigue relationship can be developed at a given temperature. Figure 5.4 shows such relationships for ARHM at 22°C and 32°C (72°F and 90°F). As expected, at a given strain level, a controlled-stress plot yields shorter fatigue life than its controlled-strain counterpart.

5.4 Mode-of-Loading Conversion: Type II

A second type of stiffness-ratio variation with cycles was found to apply to the rest of the specimens tested in this study. This Type II variation could be best described by the following expression:

$$\log\left(\frac{E}{E_0}\right) = b\,N \qquad (5.19)$$

where: b = experimentally determined regression coefficient.

A typical stiffness-ratio variation with cycles for Type II is shown in Figure 5.5, where Equation (5.19) is plotted as a straight line. Coefficient "b", like its counterpart "a" in Equation (5.1), was found to have a linear relationship with strain level as follows:

$$b = F\,\varepsilon_0 + G \qquad (5.20)$$

where: F and G = regression coefficients.

Figure 5.6 shows the variation of "b" with strain level for ARHM at -2, -12 and -29°C (28, 10, and -20°F).

The fatigue damage induced in a beam is given by Equation (5.3):

$$D = \frac{E_0 - E}{E_0} = 1 - \frac{E}{E_0} \quad \text{or} \quad E = E_0(1 - D) \qquad (5.3)$$

The stiffness-ratio (E/E_o) is then given as:

$$\frac{E}{E_0} = 1 - D \qquad (5.21)$$

The controlled-strain loading damage associated with Type II variation is obtained by replacing Equation (5.21) into (5.19):

$$\log(1 - D) = b\,N \qquad (5.22)$$

Taking the derivative of Equation (5.22) with respect to load cycle (N) will give the rate of damage change with cycles (dD/dN):

$$\frac{d[\log(1-D)]}{dN} = \frac{d[b\,N]}{dN} \tag{5.23}$$

or

$$\frac{1}{(1-D)\ln 10}\left(\frac{-dD}{dN}\right) = b \tag{5.24}$$

or

$$\frac{dD}{dN} = -b\ln 10\,(1-D) \tag{5.25}$$

Replacing coefficient "b" by its value from Equation (5.20) gives:

$$\frac{dD}{(1-D)} = -(F\,\varepsilon_0 + G)\ln 10\,dN \tag{5.26}$$

Using the constitutive law, $\sigma = \varepsilon\,E$, and replacing the stiffness, E, by its value from Equation (5.3), the last equation becomes:

$$\frac{dD}{(1-D)} = -\left(F\frac{\sigma}{E_0(1-D)} + G\right)\ln 10\,dN \tag{5.27}$$

or

$$\frac{dD}{(1-D)} = -\left(\frac{F\,\sigma + GE_0(1-D)}{E_0(1-D)}\right)\ln 10\,dN \tag{5.28}$$

or

$$\frac{E_0 dD}{\ln 10\,(-F\,\sigma + G\,E_0(D-1))} = dN \tag{5.29}$$

or

$$\frac{E_0}{\ln 10}\frac{dD}{(G\,E_0 D + \alpha)} = dN \tag{5.30}$$

where: $\alpha = -G\,E_0 - F\,\sigma$

A relationship between damage (D) and load cycle (N) for a controlled-stress loading of stress level σ is obtained by integrating Equation (5.30) as follows:

$$\frac{E_0}{\ln 10}\int_0^D \frac{dD'}{G\,E_0 D' + \alpha} = \int_1^N dN' \tag{5.31}$$

Appendix D presents the details of the integration. The final relationship from Appendix D is:

$$N = 1 + \frac{1}{G \ln 10} \ln\left(1 + \frac{G\,E_0}{\alpha} D\right) \tag{5.32}$$

where: D = damage = 1-E/Eo

N = cycle number

$\alpha = -G\,E_0 - F\,\sigma$

F and G = regression coefficients in Equation (5.20)

E_o = initial flexural stiffness, and

σ = stress level for controlled- stress loading.

The controlled-stress damage variation with cycles presented in Equation (5.32) corresponds to the Type II controlled-strain damage variation given by Equation (5.22).

5.5 Application of Type II Conversion

The same steps followed in Section 5.3 above are followed in this section to predict the controlled-stress behavior of a mix of Type II variation. An ARHM specimen at -2°C (28°F), at a strain level of 0.001 m/m, is used as an example. Using the regression equation for -2°C included in Figure 5.6, coefficient "b" is estimated at a strain level of 0.001 m/m as follows:

$$b = -0.3274(0.001) + 1.849\text{x}10^{-4} = -1.425\text{x}10^{-4} \tag{5.33}$$

Using the above coefficient, the controlled-strain stiffness-ratio variation with cycles is given by Equation (5.19) as follows:

$$\log\left(\frac{E}{E_0}\right) = -1.425\text{x}10^{-4}\,N \tag{5.34}$$

The initial flexural stiffness (E_o) at -2°C is 11,294 MPa, as predicted from Table (4.1). Therefore, the initial stress level for the controlled-stress mode is given as:

$$\sigma = E_0\varepsilon = (11294\ \text{MPa})(0.001\ \text{m/m}) = 11.294\ \text{MPa} \qquad (5.35)$$

Coefficients F and G, defined in Equation (5.20), are obtained from Figure 5.6 to determine α (Equation 5.32) as follows:

$$\alpha = -G\,E_0 - F\,\sigma = -1.849\text{x}10^{-4}(11294) - (-0.3274)11.294 = 1.6094$$

Replacing the values of E_o, G, and α into Equation (5.32) gives:

$$N = 1 + 2349\ln(1 + 1.298\,D) \qquad (5.36)$$

where: $D = 1 - E/E_0$

N = load cycle.

At a strain level of 0.001 m/m, Equations (5.34) and (5.36) represent the controlled-strain and controlled-stress behavior of ARHM at -2°C, respectively. Figure 5.7 depicts these equations, where the logarithm of stiffness-ratio (E/E_o) is plotted versus cycles (N). The controlled-strain equation (5.34) is therefore shown as a straight line, whereas the controlled-stress curve is seen to accumulate damage more rapidly than its controlled-strain counterpart.

Figure 5.7 is used to determine fatigue lives, at a stiffness-ratio of 0.5, for both modes of loading. By varying the strain level used in the example above, another pair of fatigue lives is obtained. Consequently, strain-based fatigue plots are developed for both modes of loading at a given temperature.
The above procedure has been repeated for ARHM at -12 and -29°C. Figure 5.8 shows the fatigue plots for ARHM at -2, -12, and -29°C, for both modes of loading. From this figure, fatigue lives obtained for controlled-stress conditions are shorter than their controlled-strain counterparts. A similar conclusion was reached for Type I variation, as detailed in Section 5.3.

In the procedures outlined above, the ARHM was used to demonstrate the application of the proposed conversion methods. The same procedures were also applied to other mixes included in this study, namely the CAC, ARC and PR mixes.

This application yielded strain-based fatigue life relationships, at the different test temperatures, in the form of the traditional fatigue equation:

$$N_f = K\,(1/\varepsilon_0)^n \qquad (5.37)$$

where the regression coefficients K and n were determined for the different mixes and are used in the verification section below. Table 5.2 summarizes K and n values for the controlled-stress relationships.

5.6 Experimental Verification

To verify the validity of the conversion methods proposed in this chapter, the stiffness-ratio variation of a mix tested at a given temperature in both controlled-strain and controlled-stress modes of loading should be known. A review of the literature revealed the lack of published test data in the form of stiffness-ratio variation. Therefore, no explicit verification of the conversion methods could be conducted. Instead, an implicit verification was performed.

The verification consisted of, first, establishing a relationship between parameter K and exponent n of Equation (5.37) for a wide range of mixes used in the US, Europe and South Africa (29,33,61,68,88,89,90,91). K and n values were determined from data published in the literature for controlled-stress conditions. Figure 5.9 shows the K-n variation obtained.

Next, the K and n values for ARHM, CAC, ARC and PR mixes (Table 5.2), obtained from the conversions outlined above were plotted in Figure 5.9. It is clearly seen that these last K and n values fit within the range of values obtained from the literature for controlled-stress conditions. Therefore, this implicit verification constitutes a validation of the mode-of-loading conversions proposed in this chapter.

5.7 Summary and Conclusions

In this Chapter, a method of converting controlled-strain test data into equivalent controlled-stress behavior is presented. Examination of stiffness-ratio variation with cycles for the tested beams revealed that two types of controlled-strain variations exist. For each type of variation, an equivalent controlled-stress stiffness-ratio variation with cycles is derived. Using the predicted variations, fatigue lives for both modes of loading were determined. Strain-based fatigue life variation at the different test temperatures, for both conventional and CRM mixes were developed. At a given temperature, controlled-stress mode of loading yielded, as expected, shorter fatigue lives than its controlled-strain counterpart. Validation of the proposed conversions revealed that fatigue equation-related K and n values for ARHM, CAC, ARC and PR mixes fit within the range of values obtained from the literature for controlled-stress conditions. This constituted an implicit verification of the conversions methods proposed in this chapter.

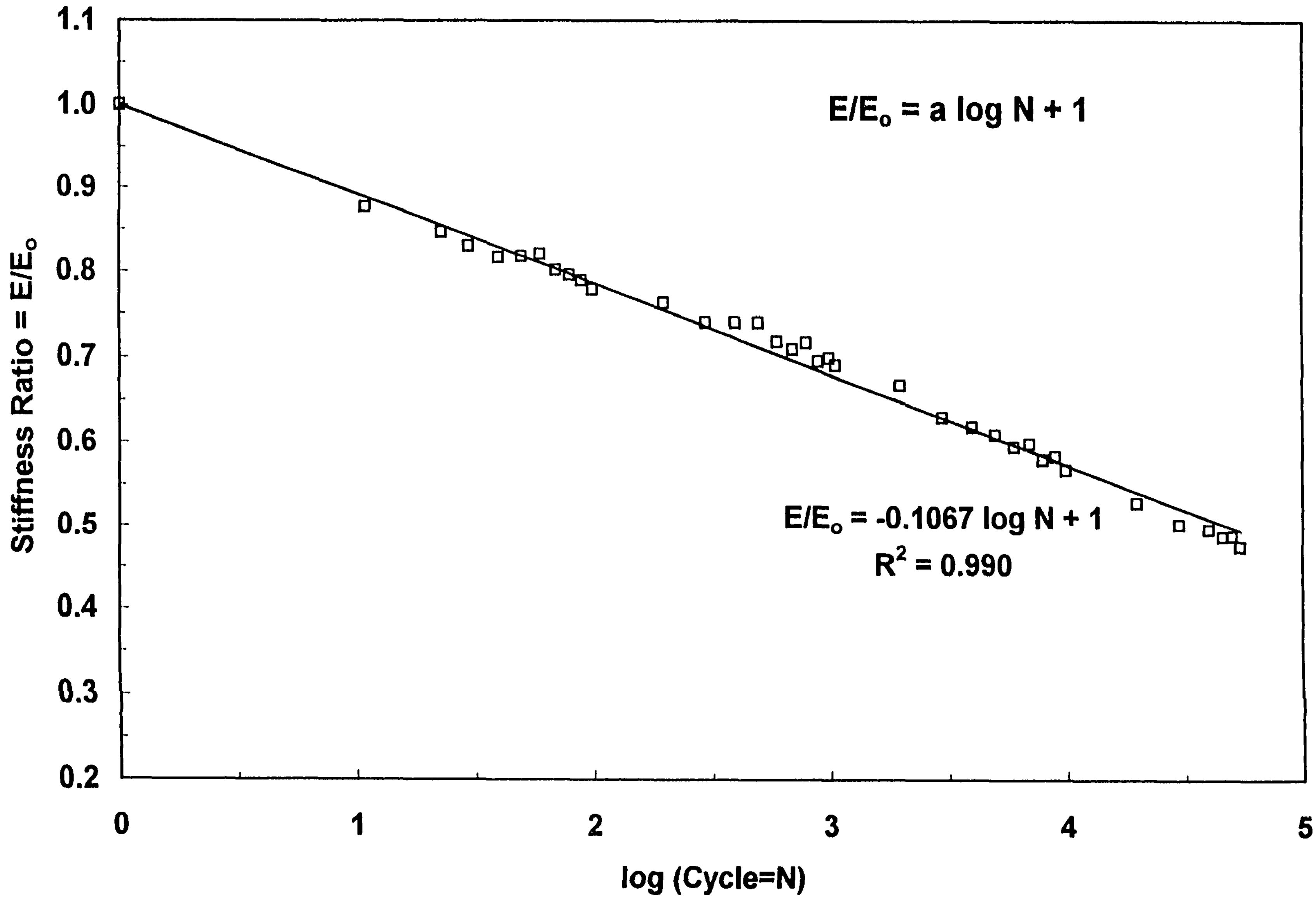


Figure 5.1 : Typical Stiffness Ratio Decrease with Cycles for ARHM at 32°C

Table 5.1 : Coefficient "a" and Strain Levels for ARHM at 22°C and 32°C

	Sample	Test Temp. °C	Tensile Strain (m/m)	a [1]
ARHM @ 90F	RI1	32.3	8.64E-04	-7.557E-02
	RI3	32.3	1.64E-03	-1.067E-01
	RI4	32.3	1.46E-03	-1.037E-01
	RI5	32.3	1.12E-03	-8.896E-02
	RI6	32.3	2.36E-03	-1.231E-01
	RI7	32.3	2.22E-03	-1.359E-01
ARHM @ 72F	RA4	22.9	6.91E-04	-8.034E-02
	RF3	20.7	1.27E-03	-1.116E-01
	RB1	20.7	7.92E-04	-9.590E-02
	RC3	22.6	1.30E-03	-1.173E-01
	RD2	21.7	1.46E-03	-1.440E-01
	RA3	21.2	2.09E-03	-1.756E-01
	RE1	21.0	2.11E-03	-1.542E-01
	RB4	21.1	4.78E-04	-7.323E-02
	RE3	22.4	8.66E-04	-9.098E-02

Note:
(1): Coefficient "a" is from equation: $E/E_o = a.\log N + 1$

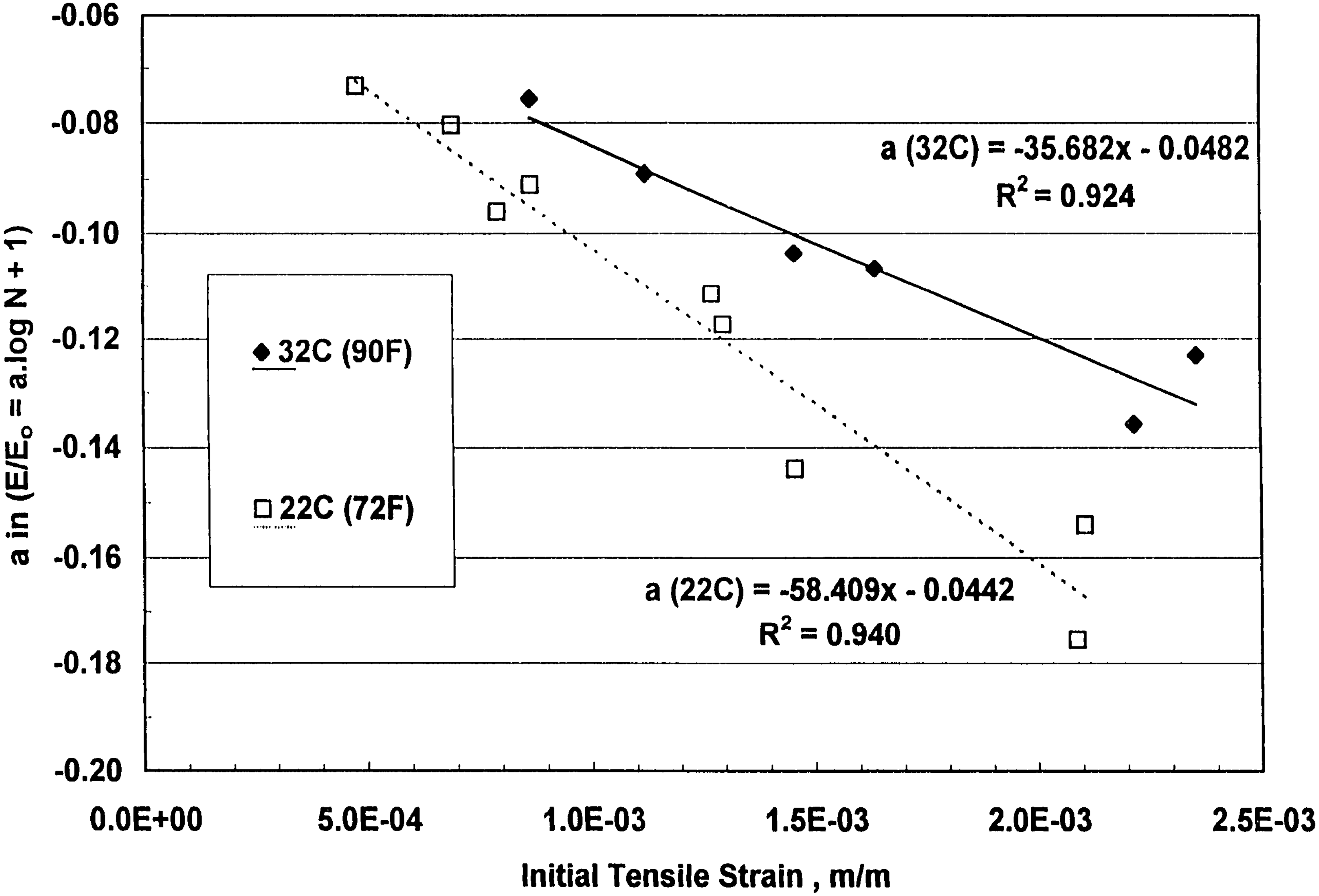


Figure 5.2 : Coefficient "a" Variation with Strain for ARHM at 22 and 32^{o}C

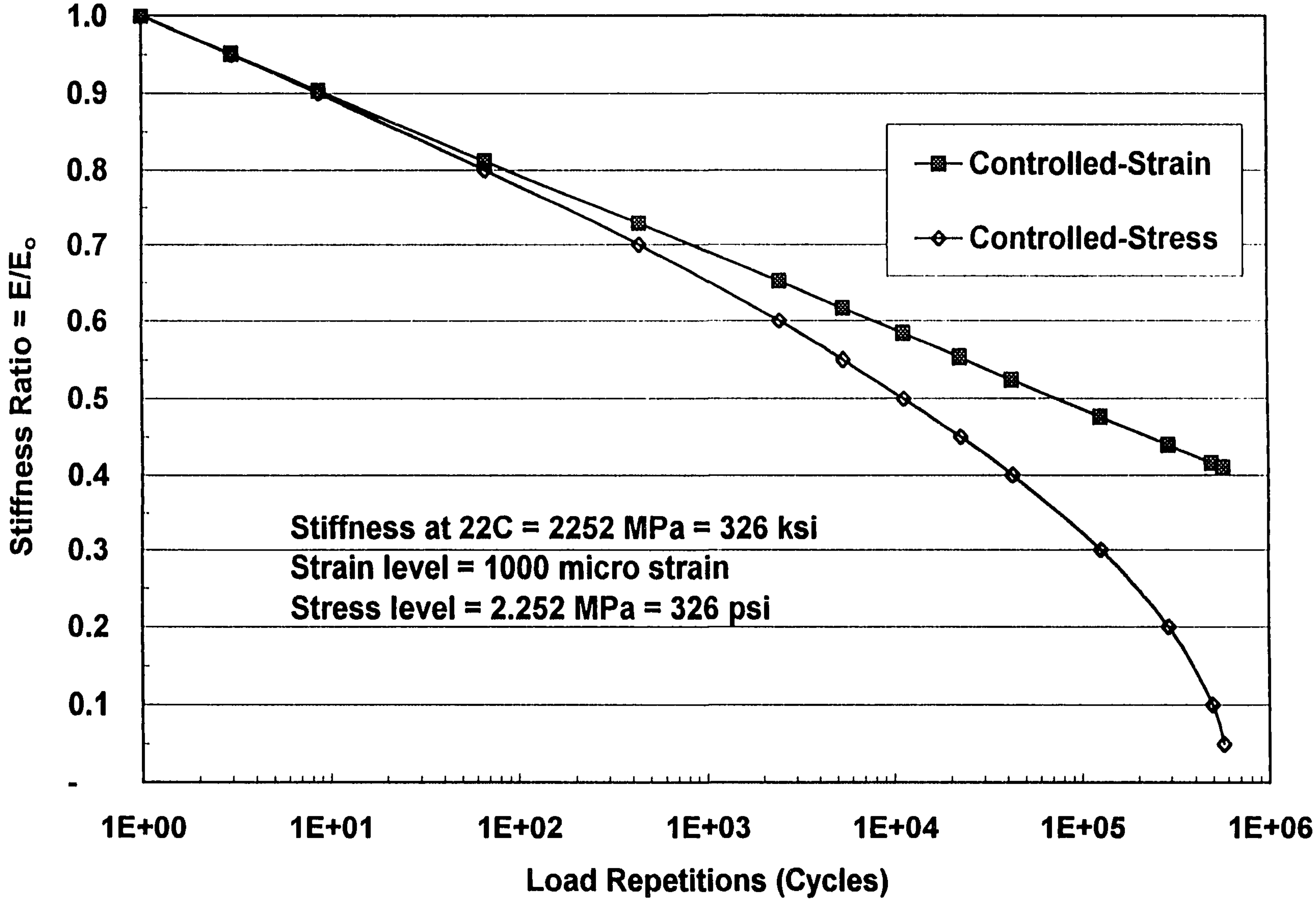


Figure 5.3 : Predicted Stiffness Ratio Variation for an ARHM Sample at 22°C

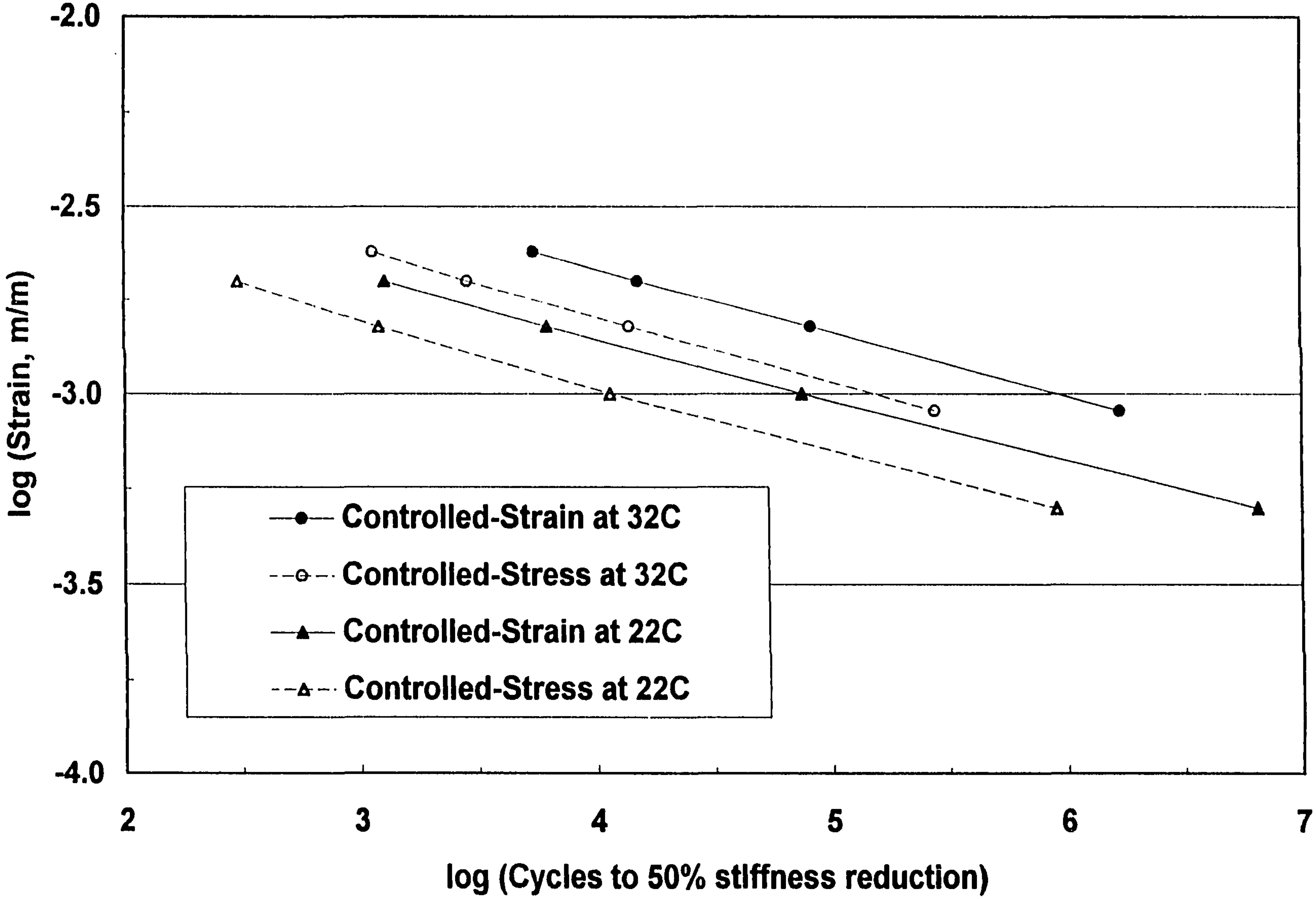


Figure 5.4 : Predicted Fatigue Life for ARHM at 22°C and 32°C

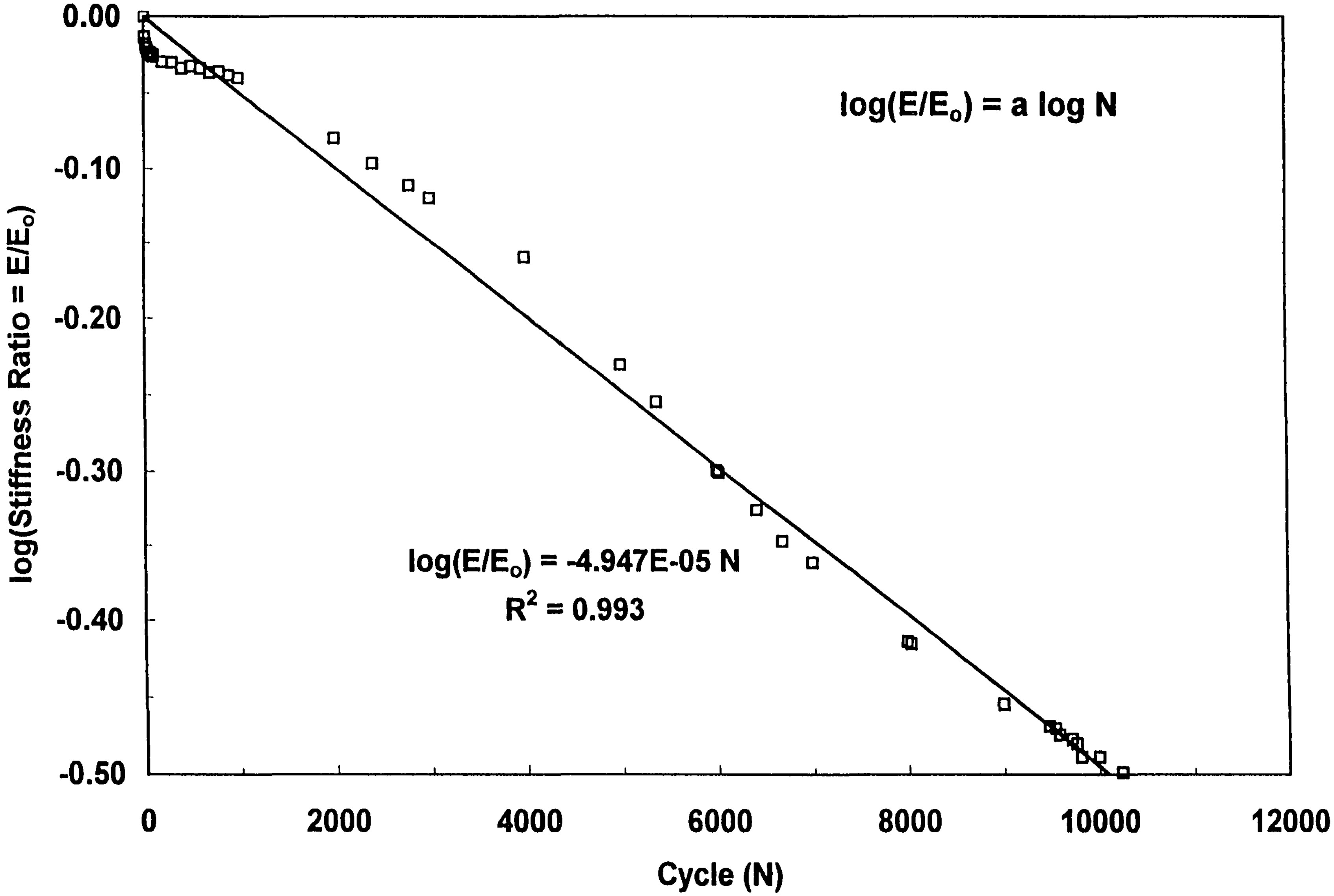


Figure 5.5 : Typical Stiffness Ratio Decrease with Cycles for ARHM at -12°C

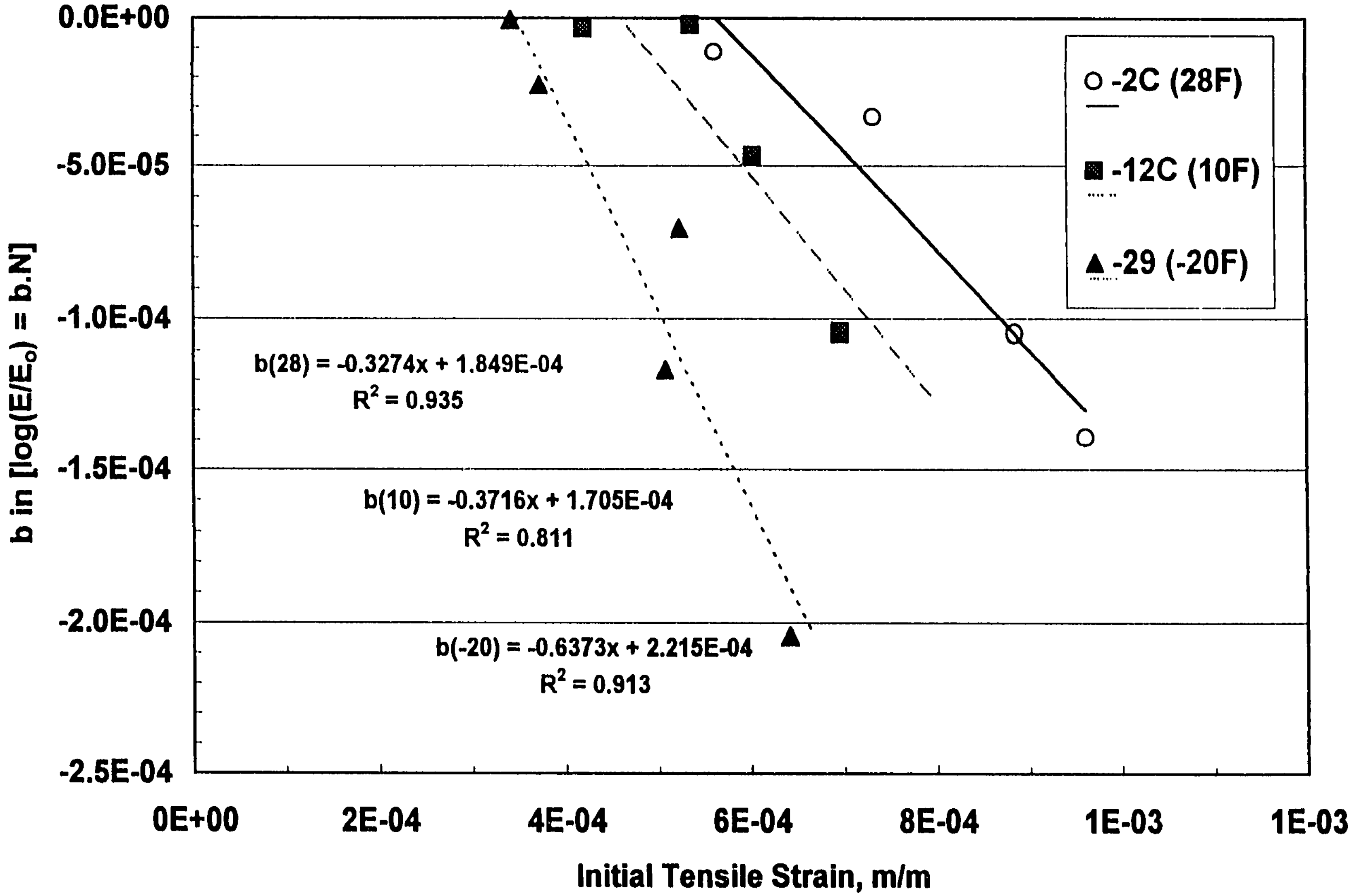


Figure 5.6 : Coefficient "b" Variation with Strain for ARHM at -2, -12 and -29°C

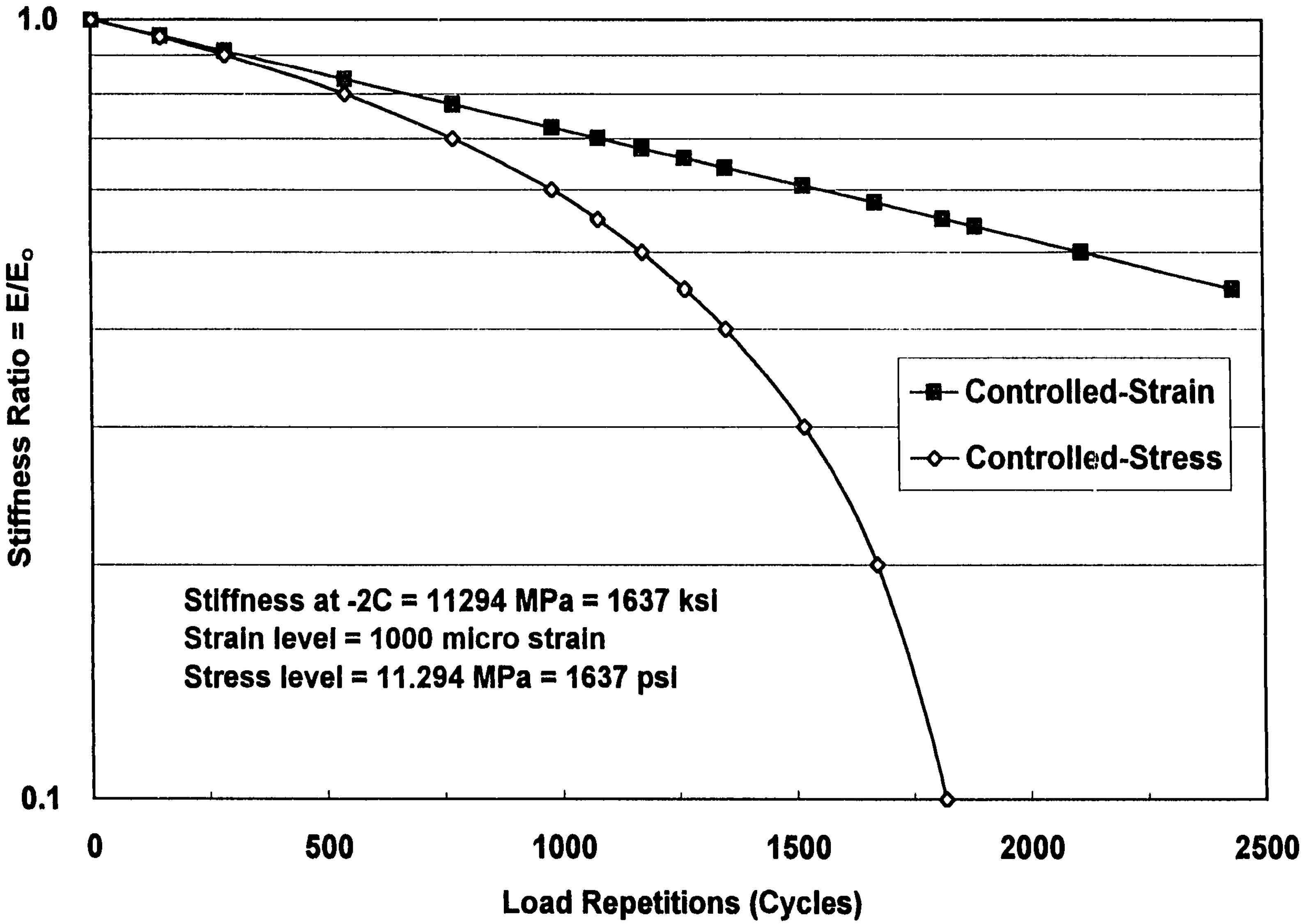


Figure 5.7 : Predicted Stiffness Ratio Variation for an ARHM Sample at -2°C

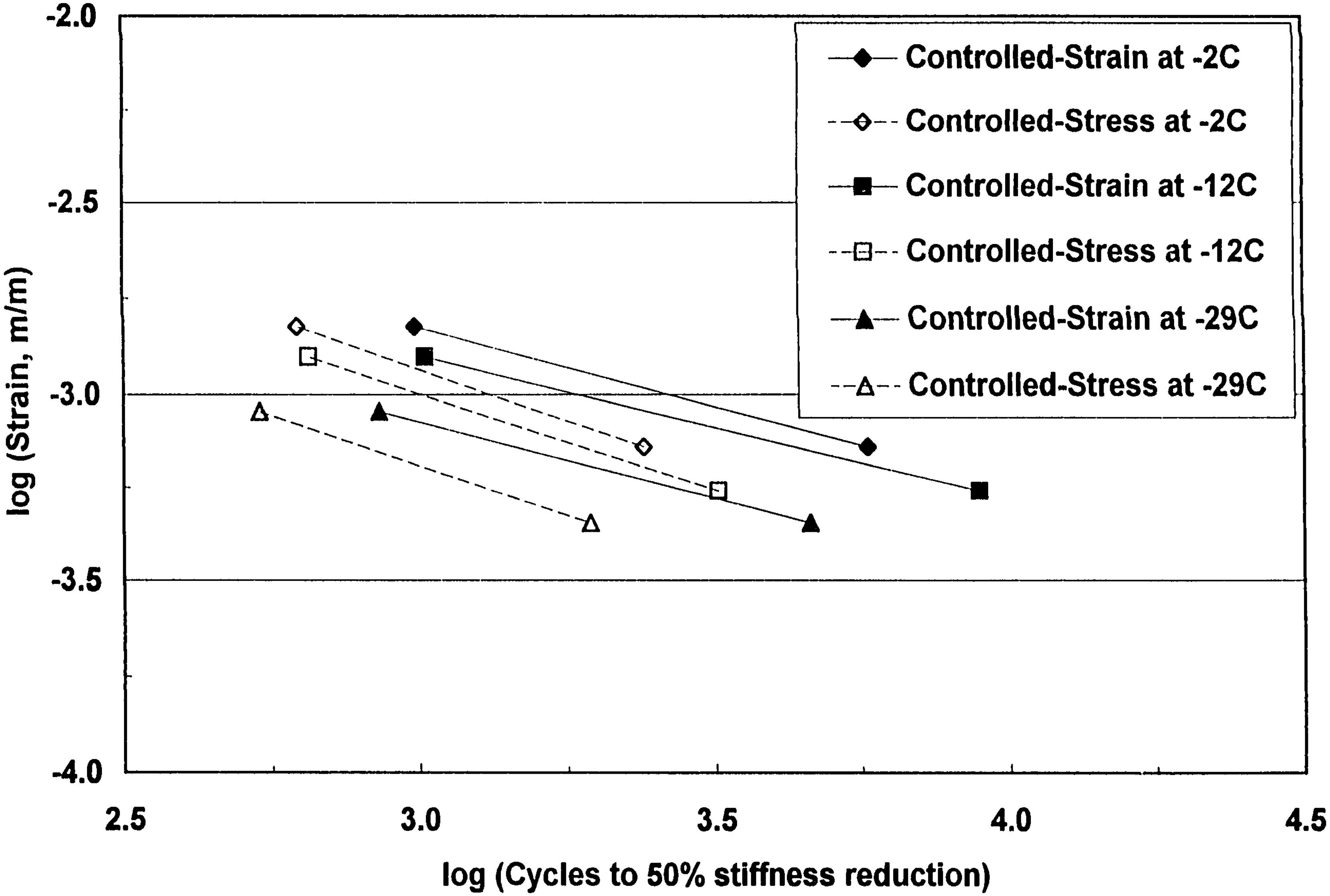


Figure 5.8 : Predicted Fatigue Life for ARHM at -2°C, -12°C and -29°C

Table 5.2 : K and n Values from Controlled-Stress Conversions

Mix	T °C	K	n
CAC	32	9.70E-04	2.304
	22	7.26E-06	2.847
	-2	3.01E-04	2.068
ARHM	32	1.94E-12	5.026
	22	5.16E-14	5.313
	-2	3.39E-06	2.834
	-12	1.28E-06	2.893
	-29	2.62E-09	3.591
ARC	22	3.98E-04	2.565
	-2	7.75E-09	3.457
	-12	1.19E-06	2.691
PR	-2	1.13E-05	2.742
	-12	2.94E-05	2.504

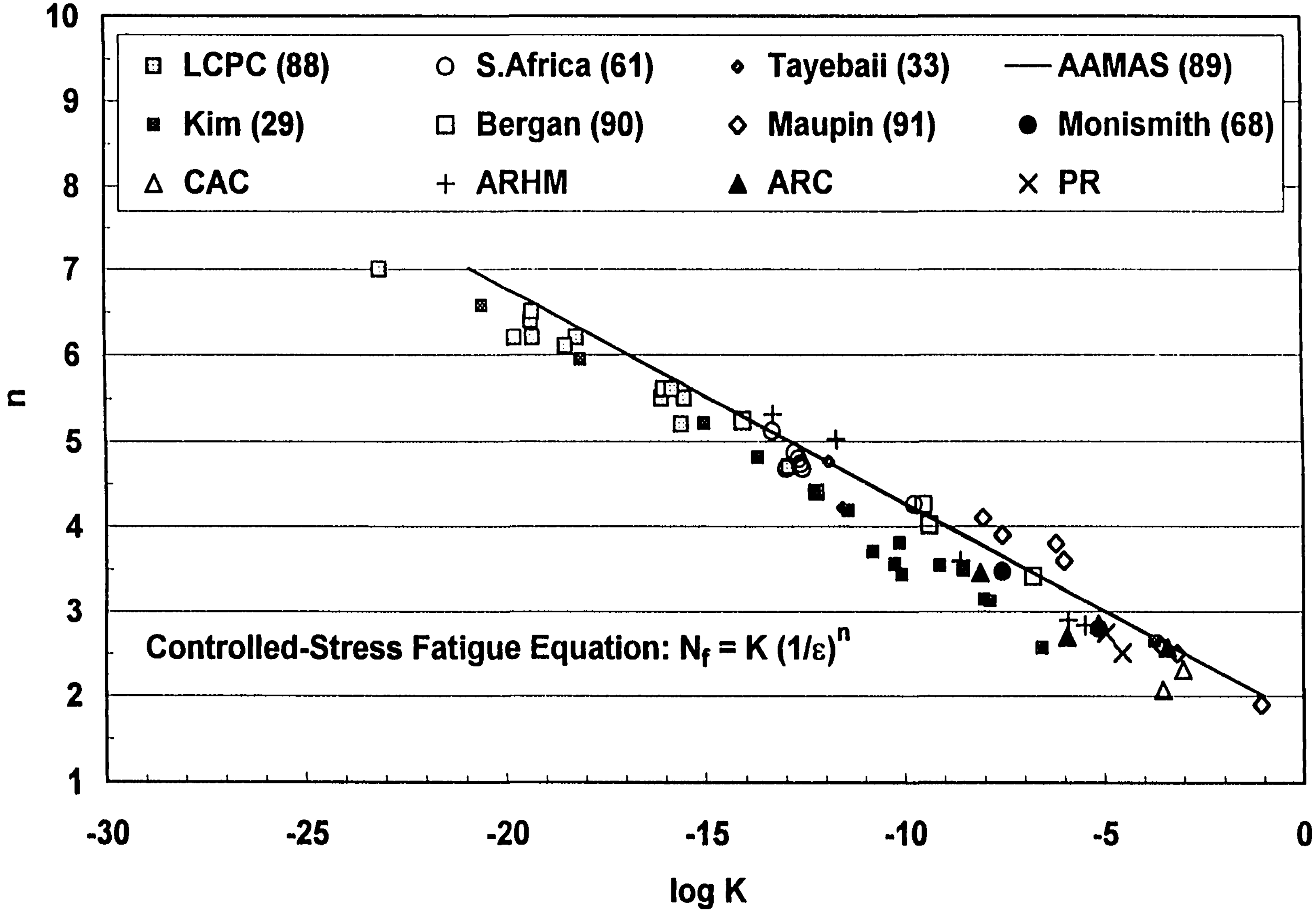


Figure 5.9 : K-n Variation for Controlled-Stress Conditions

CHAPTER SIX

FATIGUE LIFE MODELING

6.1 Introduction

Traditionally, laboratory determined asphalt concrete fatigue life has been related to initial test conditions, namely, the initial tensile strain and initial mix stiffness. This was illustrated in Chapter 4, where fatigue life relationships for both conventional and CRM mixes were developed.

In this Chapter, a fatigue life model, applicable to the haversine pattern of loading used in this study, is presented. The model takes into consideration the mode-of-loading and cumulative dissipated energy to failure. The advantage of including this last factor is that it captures the viscoelastic behavior of the mix from the initial phase to the final phase of a specimen's life. The model includes also the initial strain, stiffness and phase angle of the mix.

6.2 Model Development

As mentioned in Chapter 3, a haversine deflection pulse is imposed at the centerline of a beam during testing. The resulting strain is a haversine pulse $\varepsilon(t)$ given as:

$$\varepsilon(t) = \varepsilon_i \sin^2\left(\frac{\pi}{T}t\right) \tag{6.1}$$

where: ε_i = strain amplitude at cycle i

t = time in seconds ($0 < t < 0.1$ sec)

T = loading period (0.1 sec)

Prior to developing the fatigue life model, it is essential to derive the dissipated energy expression corresponding to a haversine loading condition. Appendix E presents the details of this derivation. From Equation (17) of Appendix E, the dissipated energy per cycle for a haversine pulse is given as:

$$U_i = \frac{\pi}{4} E_i (\varepsilon_i)^2 \sin(2\phi_i) \tag{6.2}$$

where: U_i = dissipated energy at cycle i

ε_i, E_i = strain and stiffness at cycle i, respectively, and

ϕ_i = phase angle between stress and strain at cycle i

The above expression assumes that the stress and strain pulses are haversines with amplitudes σ_i and ε_i, respectively, and a phase shift of ϕ_i.

The total or cumulative dissipated energy to failure (CDE_f) is then given as:

$$CDE_f = \sum_{i=1}^{N_f} U_i = \sum_{i=1}^{N_f} \left(\frac{\pi}{4} E_i (\varepsilon_i)^2 \sin 2\phi_i \right) \tag{6.3}$$

where: N_f = number of cycles to failure (i.e. fatigue life).

Alternatively, if the variation of dissipated energy per cycle with number of cycles is given, as shown in Figure 6.1, the cumulative dissipated energy to failure is the area under the curve, up to the number of cycles to failure (N_f):

$$CDE_f = \int_1^{N_f} U(N)\, dN \tag{6.4}$$

where: $U(N)$ = dissipated energy as a function of load cycle N.

Figure 6.2 shows the influence of mode-of-loading on the variation of dissipated energy per cycle with loading cycles. In a controlled-strain fatigue test, the energy dissipated per cycle decreases with increasing number of load repetitions, whereas, in a controlled-stress test, the dissipated energy increases with number of load repetitions. In a hypothetical "controlled-energy" test, the dissipated energy per cycle (U_i) remains constant during testing, and the cumulative dissipated energy to failure (CDE_f) is therefore the product of the initial dissipated energy (U_o) and the number of repetitions to failure (N_f), or:

$$CDE_f = N_f U_o \tag{6.5}$$

For strain and stress-controlled type of testing, an energy ratio factor (ψ) is introduced (55). This mode-of-loading dependent factor is defined as:

$$\psi = \frac{N_f U_o}{CDE_f} \tag{6.6}$$

where: $\psi > 1$, for controlled-strain test,

$\psi < 1$, for controlled-stress test, and

$\psi = 1$, for controlled-energy test.

Figures 6.1 and 6.2 illustrate the definition of CDE_f and ψ, and the effect of mode-of-loading on ψ.

Replacing Equation (6.2) into (6.6) gives:

$$\psi = \frac{N_f\,[0.25\pi E_o(\varepsilon_o)^2 \sin 2\phi_o]}{CDE_f} \tag{6.7}$$

where: CDE_f = cumulative dissipated energy to failure

N_f = fatigue life

E_o, ε_o = initial stiffness and strain, respectively, and

ϕ_o = initial phase angle between stress and strain.

For a mix tested at a given temperature, the cumulative dissipated energy to failure can be related to the number of repetitions to failure as follows (55):

$$CDE_f = A\,(N_f)^Z \tag{6.8}$$

where: A, Z = experimentally determined regression constants.

To account for the effect of temperature, the following relation is proposed where cumulative dissipated energy to failure is related to fatigue life through the mix initial flexural stiffness (E_o):

$$CDE_f = a\,(E_o)^b\,(N_f)^c \tag{6.9}$$

where: a, b, and c = experimentally determined regression coefficients

The regression coefficients associated with the above equation, for the different mixes studied, were presented in Chapter 4.

Replacing Equation (6.9) into (6.7) gives:

$$\psi = \frac{N_f\,[0.25\pi E_o(\varepsilon_o)^2 \sin 2\phi_o]}{a\,(E_o)^b (N_f)^c} \tag{6.10}$$

Rearranging terms in Equation (6.10), the fatigue life (N_f) for a haversine loading pattern is given as:

$$N_f = \left(\frac{4\, a\, \psi}{\pi (E_o)^{1-b} (\varepsilon_o)^2 \sin 2\phi_o} \right)^{\frac{1}{1-c}} \qquad (6.11)$$

where: Ψ = energy ratio factor, defined in Equation 6.6

a, b, c = regression coefficients from Equation (6.9)

ε_o, E_o = initial strain and stiffness, respectively.

ϕ_o = initial phase shift between strain and stress.

6.3 Model Parameters

The model developed in Equation (6.11), which is similar to the Shell fatigue equation (60), can also be written in the following form:

$$N_f = \left(\frac{4\, a\, \psi}{\pi \sin 2\phi_o} \right)^{\frac{1}{1-c}} \left(\frac{1}{\varepsilon_o} \right)^{\frac{2}{1-c}} \left(\frac{1}{E_o} \right)^{\frac{1-b}{1-c}} \qquad (6.12)$$

Equation (6.12) is in the form of the traditional fatigue equation presented in Chapter 2 and used in Chapter 4:

$$N_f = K \left(\frac{1}{\varepsilon_o} \right)^n \left(\frac{1}{E_o} \right)^m \qquad (6.13)$$

where: K, n, m = experimentally determined regression constants.

Comparing Equations (6.12) and (6.13), the constants in Equation (6.13) are:

$$K = \left(\frac{4\, a\, \psi}{\pi \sin 2\phi_o} \right)^{\frac{1}{1-c}} \qquad (6.14)$$

$$n = \frac{2}{1-c} \qquad (6.15)$$

$$m = \frac{1-b}{1-c} \qquad (6.16)$$

From the above three identities, it can be seen that parameter K, being a function of Ψ and ϕ_o, is a temperature-dependent parameter, whereas n and m are constants for a given mix.

For a given mix, determining the variation of K with temperature, assumes that mix properties, namely E_o, ϕ_o, and Ψ, are given as a function of test temperature (T).

In Chapter 4, the initial flexural stiffness (E_o) regressions for the mixes included in this study were given as:

$$\log E_o = a_1 + a_2\, T + a_3\, T^2 \qquad (6.17)$$

Regression coefficients a_1, a_2 and a_3 for the different mixes are summarized in Table 4.1.

The temperature dependency of the initial phase angle (ϕ_o) was also shown in Chapter 4, where phase angle–stiffness regressions were developed as follows:

$$\phi_0 = b_1 + b_2 \log E_0 + b_3 (\log E_0)^2 \qquad (6.18)$$

Table 4.6 presented regression coefficients b_1, b_2 and b_3 for all mixes.

The energy ratio factor (Ψ) is calculated for the beam samples using its definition shown in Equation (6.6). It was noticed that for a given mix, the energy factor is a function of mix stiffness (i.e. test temperature) and could be characterized by the following relationship:

$$\psi = a\, e^{-b \log E_o} \qquad (6.19)$$

where: a and b = regression coefficients.

A typical variation of energy ratio factor with stiffness is shown in Figure 6.3. Table 6.1 shows the regression coefficients, a and b, for the mixes included in this study.

For a given mix, Equations 6.17, 6.18 and 6.19 are used to estimate the three properties (E_o, ϕ_o, and Ψ) at a specific temperature. Those estimates are then used in

Equation (6.14), in conjunction with coefficients a and c from Equation (6.9), to obtain a value of parameter K at that specific temperature.

Using the procedure outlined above, the variation of parameter K with temperature was obtained for the mixes included in this study. Figures 6.4 and 6.5 show these variations for the Californian and Alaskan mixes, respectively. It is seen that K decreases with an increase in temperature for all mixes. At a given temperature, K values for CAC are higher than that of ARHM (Figure 6.4), whereas values for Alaskan CRM mixes are higher than that of the AC-5 mix (Figure 6.5).

In the next Chapter, the model developed herein is applied to conventional and CRM mixes to determine their anticipated fatigue behavior in a pavement structure. Finite-element based mechanistic analysis is used to determine pavement response under representative traffic load and environmental conditions.

6.4 Summary and Conclusions

In this Chapter, a fatigue life model, applicable to the haversine pattern of loading used in this study, is presented. The model takes into account the cumulative dissipated energy to failure, mode-of-loading, and initial strain, stiffness and phase angle of the mix. Analogy with the traditional strain-based fatigue equation revealed that K is a temperature-dependent parameter, whereas n and m are independent of mix temperature. Using stiffness, phase angle and energy ratio values predicted from temperature-dependent relationships, the variation of parameter K with temperature was developed for all mixes included in this study. A decrease in K was associated with an increase in temperature for conventional as well as CRM mixes.

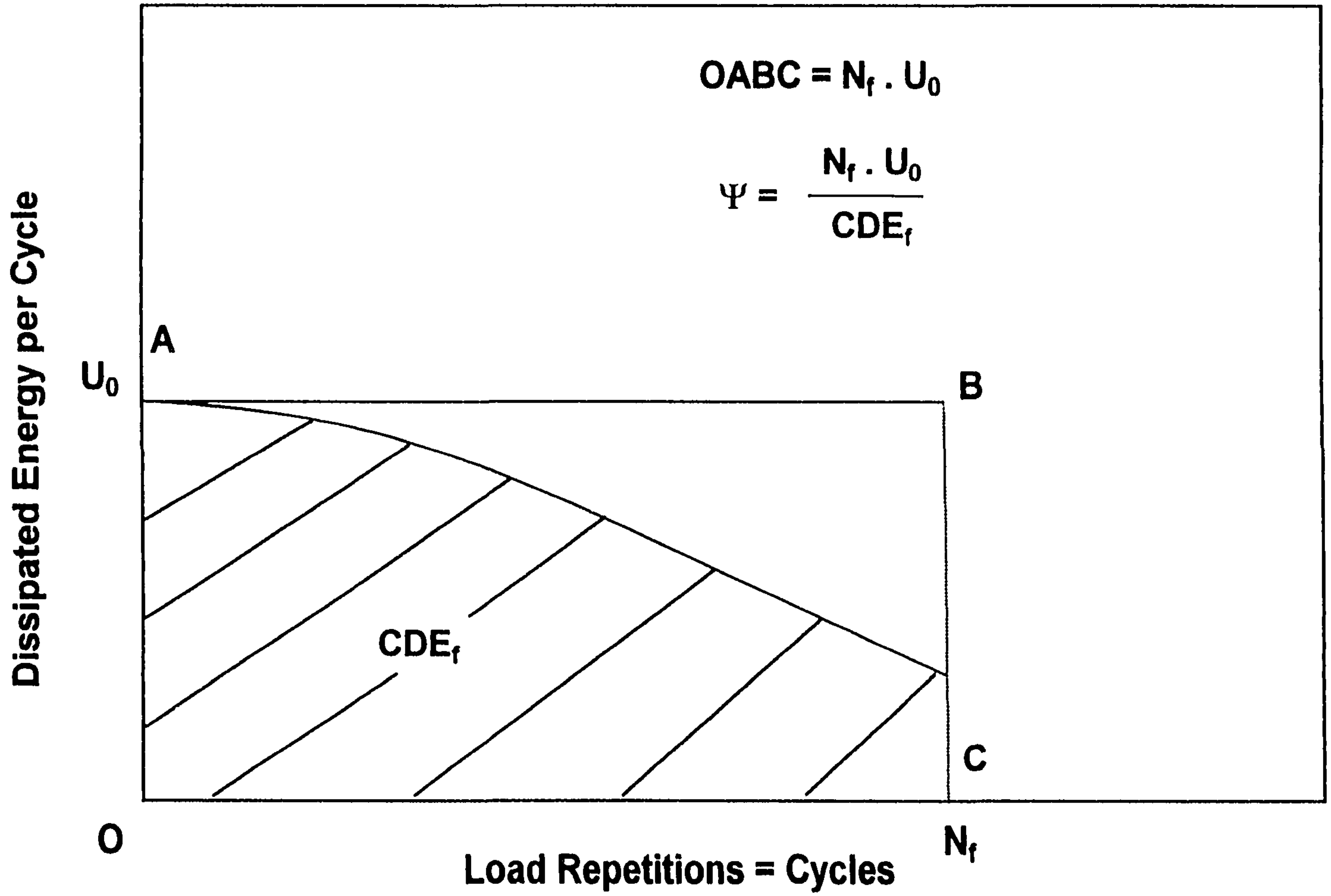


Figure 6.1 : Definition of Cumulative Dissipated Energy and Energy Ratio

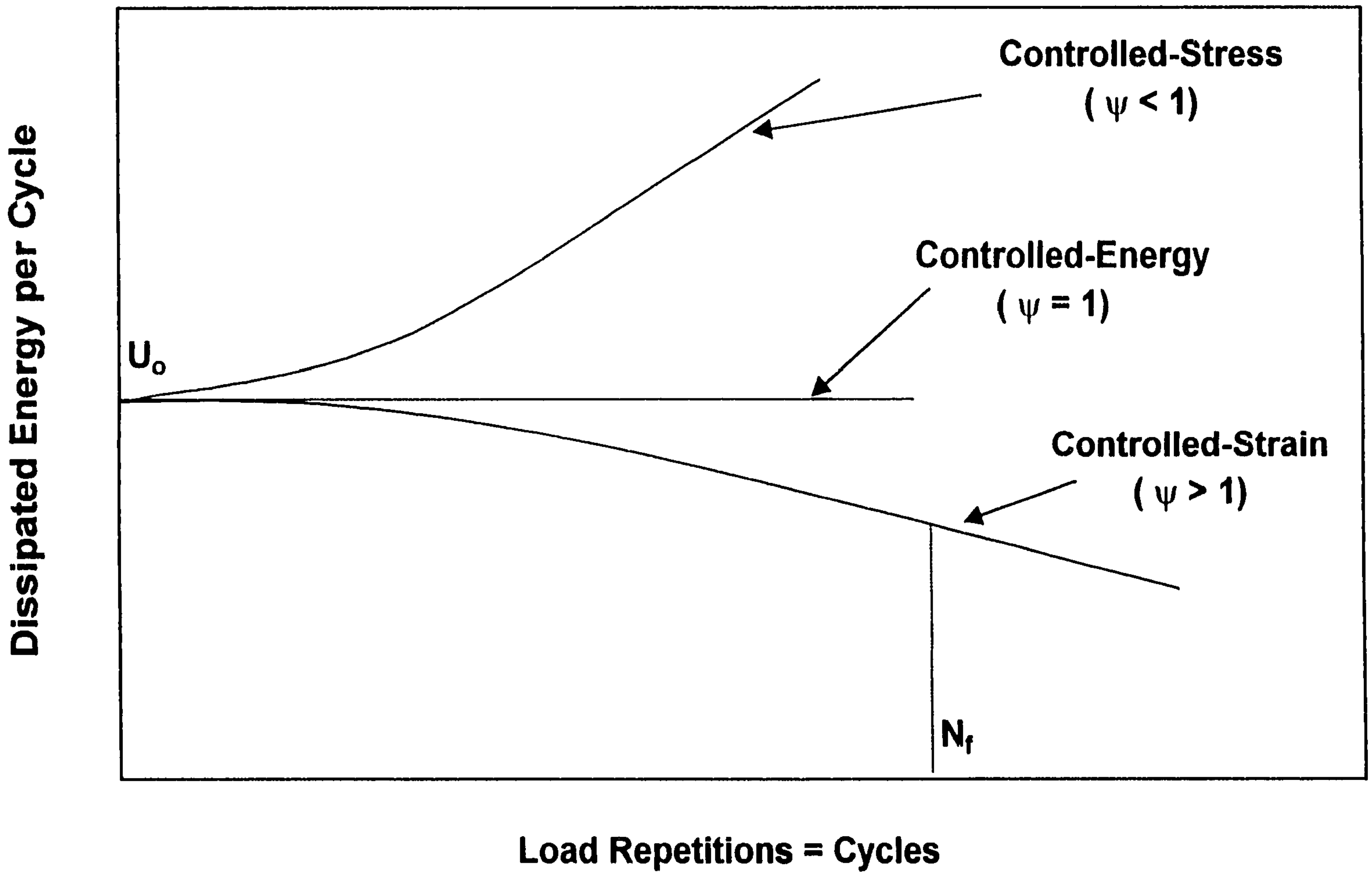


Figure 6.2 : Effect of Mode-of-Loading on Dissipated Energy

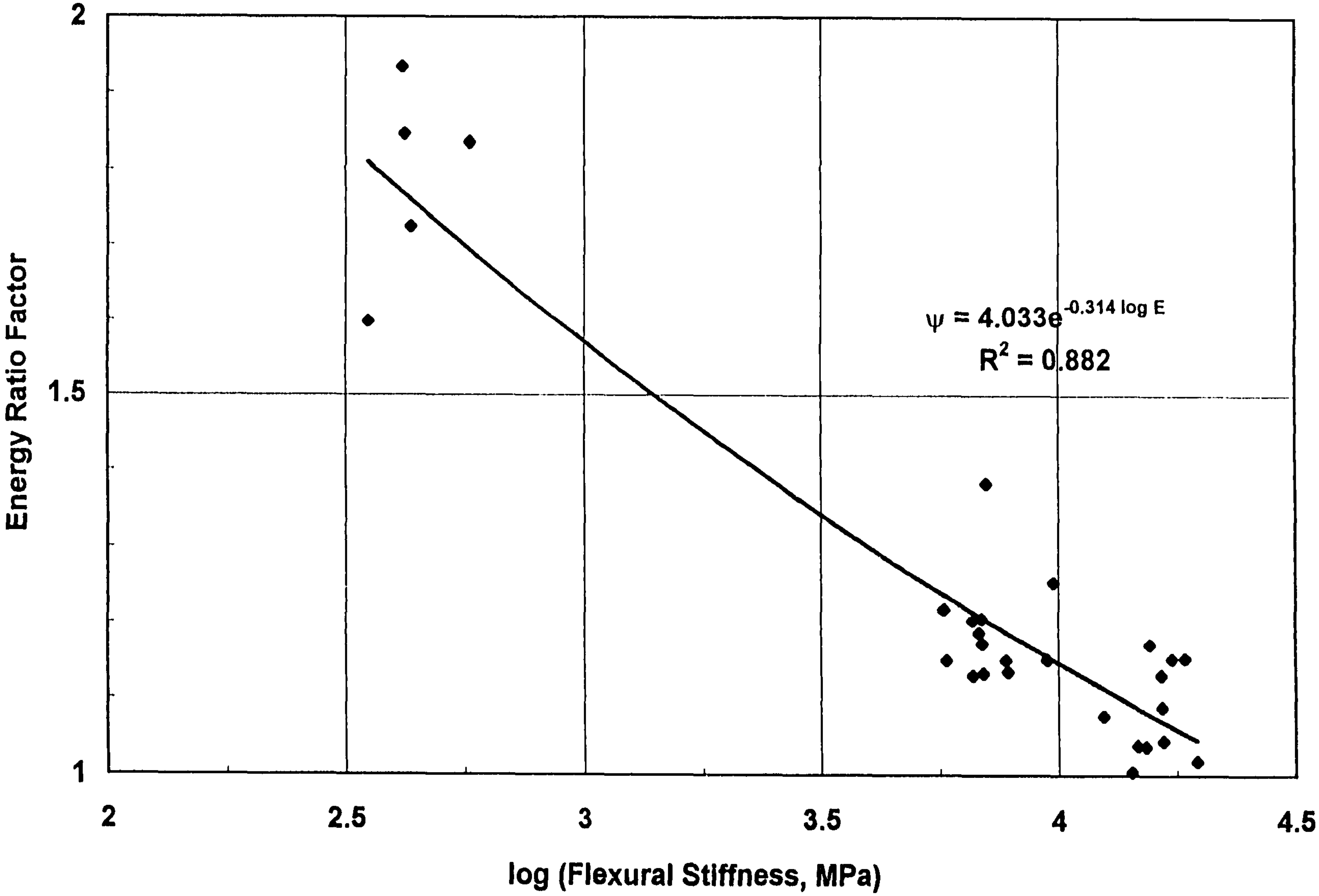


Figure 6.3 : Energy Ratio Factor Variation with Flexural Stiffness for AC-5 Mix

Table 6.1 : Coefficients for "Energy Ratio-Stiffness" Regressions

Mix Type	$\psi = a \exp(-b \log E)$	
	a	b
CAC-DG	2.128	0.155
ARHM-GG	3.450	0.297
AC-5	4.033	0.314
AR	2.780	0.136
PlusRide	1.603	0.095

E = Initial Flexural Stiffness, MPa

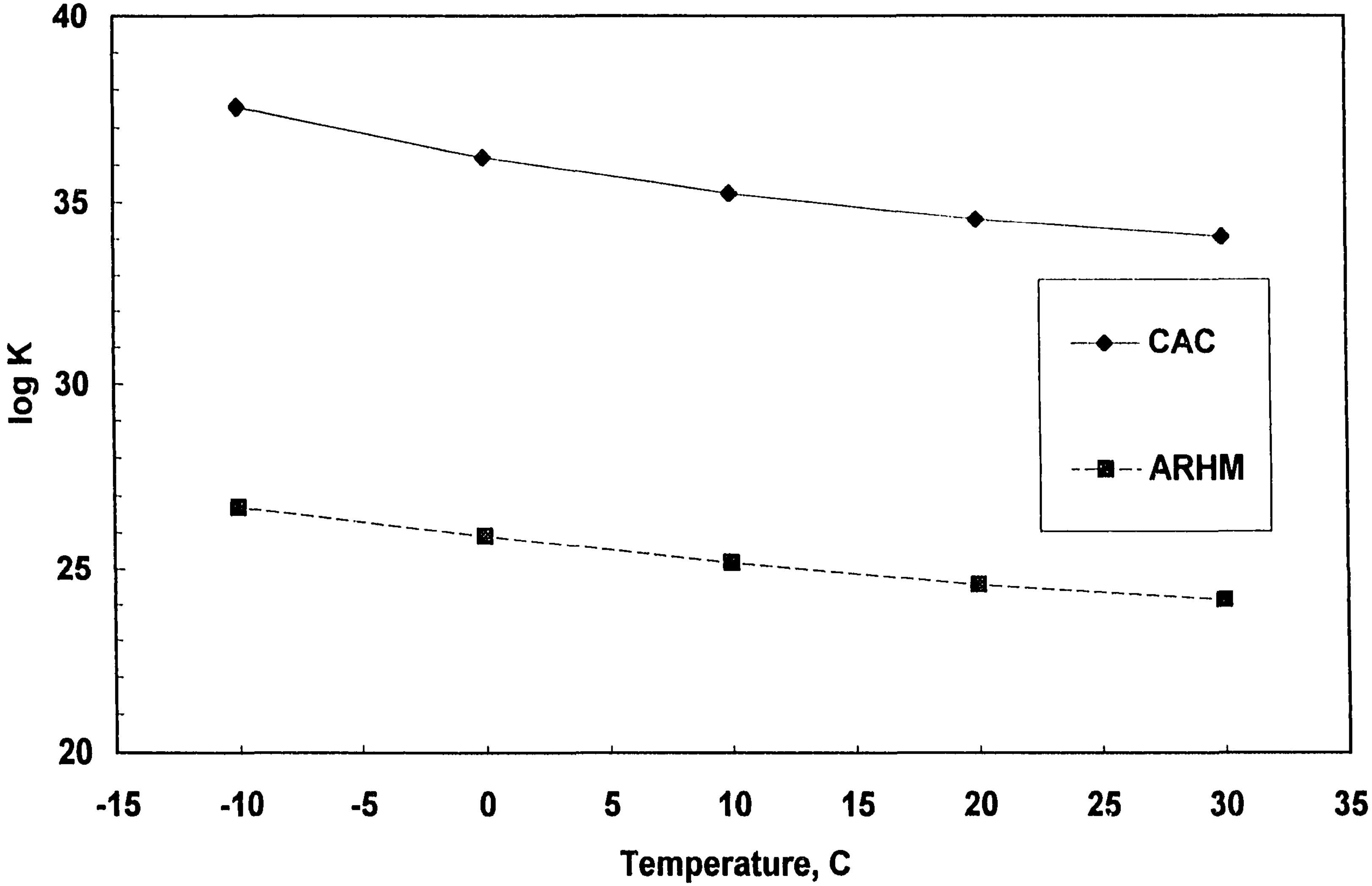


Figure 6.4 : Variation of K with Temperature for CAC and ARHM

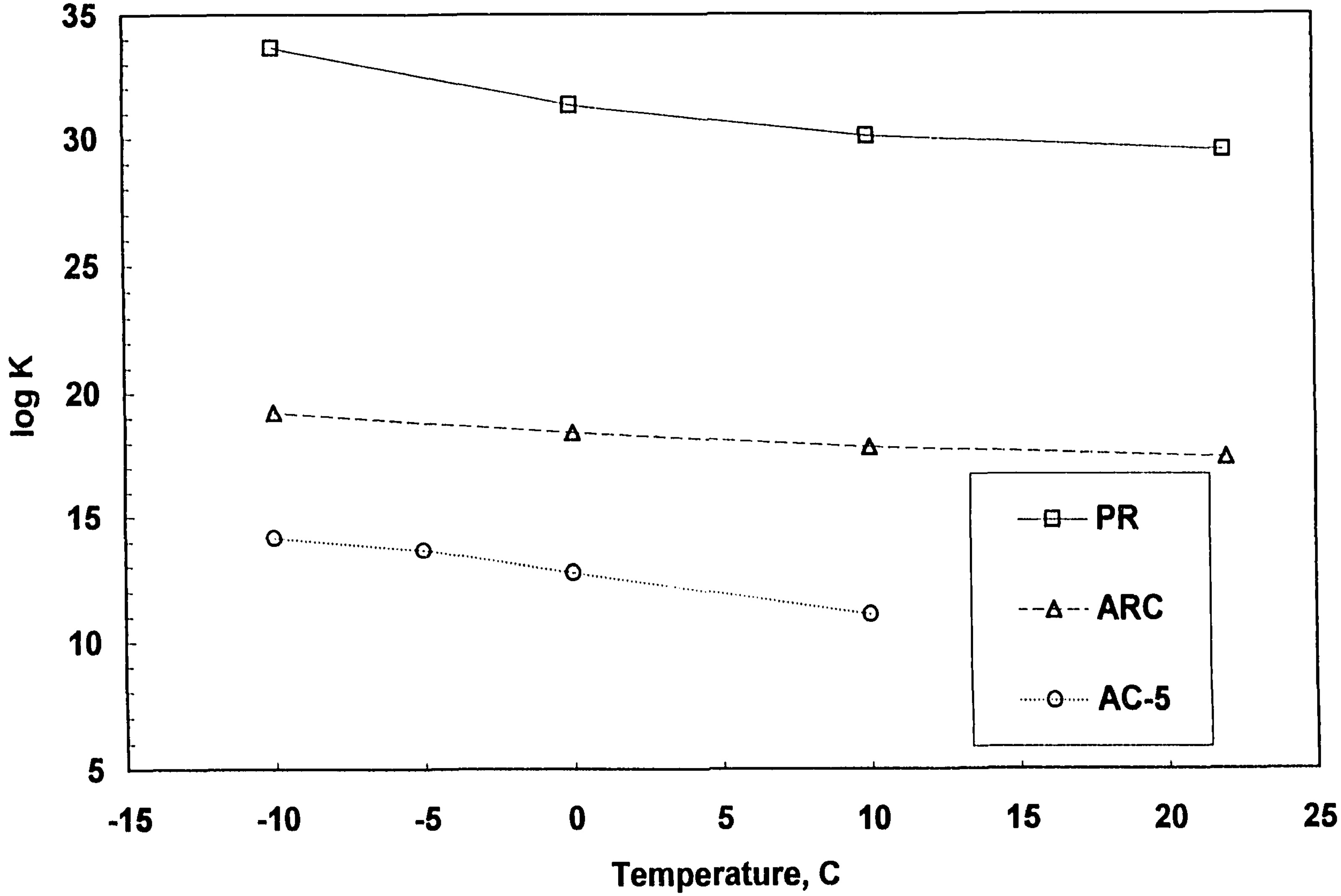


Figure 6.5 : Variation of K with Temperature for ARC, PR and AC-5 mixes

CHAPTER SEVEN

APPLICATIONS

7.1 Introduction

The previous chapter presented a new fatigue life model applicable to both conventional and CRM mixes. In this chapter, this model is applied to two Californian mixes, CAC and ARHM, which are used as surface layers of typical pavement structures. Finite-element based mechanistic analysis will be used to predict pavement response under standard loading and anticipated environmental conditions. The application is used to compare surface layer fatigue behavior.

7.2 Pavement Layer Properties

In this application, two Californian mixes, namely, the conventional asphalt concrete (CAC-DG) and the asphalt-rubber hot mix (ARHM-GG), are used, separately, as surface layers of a typical Californian pavement structure. The pavement structure adopted is described by Long et al. (92), and has been used as part of an accelerated pavement testing program implemented by the California Department of Transportation.

The pavement structure consists of a 130 mm (5 in.) surface layer, a 300 mm (12 in.) granular base layer, and a 300 mm subbase layer overlaying a natural subgrade. Two environmental conditions (seasons) are assumed to have an influence on the fatigue behavior of the pavement. A spring season, where wet subsurface conditions and an average surface temperature of 10°C prevail, and a summer season with a dry subsurface and an average surface temperature of 30°C.

Pavement layer thicknesses and material properties for both seasons are shown in Figures 7.1 and 7.2. Surface layer stiffnesses, for CAC and ARHM, are estimated from the regressions developed in Chapter 4 (Table 4.1) at 10°C and 30°C.

A standard wheel load, consisting of 40 kN (i.e. half of an Equivalent Standard Axle Load (ESAL) of 80 kN) is assumed to be applied normal to the pavement surface. A wheel radius of 130 mm (5 in.) is assumed, which results in a tire pressure of about 791 kPa (115 psi).

7.3 Finite Element Model

A number of studies have successfully used the finite element program Abaqus (93) to analyze flexible pavements (78,94,95,96). In this application, Abaqus is used to predict pavement response under the conditions described in the previous section. The pavement response of particular interest in this case is the tensile radial strain at the bottom of the asphalt concrete surface layer. This predicted strain is used in the newly developed model to estimate surface layer fatigue life.

Figure 7.3 shows the finite element mesh adopted for this application. The discretization of the pavement structure into finite elements consisted of choosing a fine mesh close to the wheel load, and a coarse mesh at locations far from the load. In the vicinity of the load, a mesh of 25 mm (1 in.) spacing in the x and y directions is used. A gradually increasing element size is used away from the load. All pavement layers were modeled as multi-element layers. The horizontal and vertical extents of the discretized structure are set to 2.2 m (85 in.), where wheel load effect is negligible. An axysymmetric finite element model is used to represent the structure using ring elements (element type: CAX4). The discretization resulted in a total of 350 nodes and 312 elements.

The different pavement layers were modeled as homogeneous, linear elastic materials. Modulus of elasticity (stiffness) and Poisson's ratio values are summarized in Figures 7.1 and 7.2. As seen in these figures, four cases are considered in the analysis. For each season, the CAC and ARHM are used, separately, as surface layers.

Typical Abaqus input and output file printouts are included in Appendix F.

Abaqus-predicted tensile strains are shown in Table 7.1. It is seen that predicted strains follow expected trends: an increase in surface layer stiffness results in a decrease in tensile strain. In other words, the use of the high-stiffness CAC layer resulted in a lower strain. From the Abaqus outputs, the maximum tensile strain in the surface layer was found to occur exclusively at the bottom of the asphalt concrete layer, under the wheel load.

7.4 Application of New Model

The strains obtained from the finite element analysis in the previous section are used to predict fatigue life. The fatigue model developed in Chapter 6 is used for this purpose. The model is as follows:

$$N_f = \left(\frac{4\,a\,\psi}{\pi (E_o)^{1-b} (\varepsilon_o)^2 \sin 2\phi_o} \right)^{\frac{1}{1-c}} \qquad (7.1)$$

The dissipated energy-related coefficients, a, b and c, for CAC and ARHM, are obtained from Table 4.10. The stiffness (E_o), phase angle (ϕ_o) and energy ratio factor (ψ) are estimated, at 10°C and 30°C, from the regressions developed in Chapters 4 (Tables 4.1, 4.6) and 6 (Table 6.1). All these parameters, determined for CAC and ARHM at 10°C and 30°C, are summarized in Table 7.2.

The parameters associated with a specific pavement surface mix, from Table 7.2, are replaced in the model above to obtain a relationship between fatigue life (N_f) and tensile strain (ε_o). The resulting fatigue life variations with strain are shown in Figure 7.4, for CAC and ARHM at 10°C and 30°C.

Tensile strains obtained from the finite element analysis (Table 7.1) are used in conjunction with the relationships shown in Figure 7.4 to determine fatigue life. Table 7.3 presents the predicted fatigue lives. It is seen that, for both seasons, the use of ARHM as surface layer results in longer fatigue life than the CAC. The ratios of

ARHM fatigue life to that of CAC are 9.3 and 4.6, for spring and summer seasons, respectively.

7.5 Limitations

In the application demonstrated above, pavement surfaces consisted of relatively thick layers. Due to wheel load, peak tensile strains were applied at the underside of these layers. This allowed the use of the strain-dependent model (Equation (7.1)) to determine fatigue life. However, in the case of an overlay or thin surface layer, the strain-dependent model is not applicable because the thin layer exhibits compressive rather than tensile strains. In this case, an energy-based model is more appropriate to estimate fatigue life. Distortion energy-based equations were found to be applicable to thin surface layers (97). The distortion energy is a function of stresses and strains acting at a given point in the layer and does not reflect the effect of a single uniaxial parameter such as tensile strain or stress. It represents the energy associated with shear deformations.

In a fatigue test, the distortion energy for a beam specimen, at any cycle i, can be represented by (98):

$$DE_i = \varepsilon_i \, \sigma_i \, (1 + \nu)/3 \qquad (7.2)$$

where: DE_i = distortion energy, kJ/m^3

ε_i = strain, m/m,

σ_i = stress, kPa, and

ν = Poisson's Ratio.

A limiting fatigue criteria using distortion energy was found to have the following form (97):

$$N_f = a\left(\frac{1}{DE_o}\right)^b \qquad (7.3)$$

where: N_f = repetitions to failure (fatigue life),

DE_o = initial distortion energy, kJ/m^3, and a , b = experimentally determined regression coefficients.

Figure 7.5 shows the variation of initial distortion energy with fatigue life for CAC and ARHM at 22°C (72°F), in addition to coefficients a and b for these mixes.

To illustrate the application of the distortion energy fatigue criterion to overlays, the pavement section shown in Figure 7.6 is considered (97). The existing CAC layer, under the overlay, is assumed to have reached its fatigue life. Its stiffness was set at 2415 MPa.

Analyses were conducted to compare the fatigue behavior of CAC and ARHM overlays. From mechanics (99), the distortion energy (DE) at a given point in the overlay is given as:

$$DE = 0.5\sum_{i=1}^{3}(\varepsilon_i\sigma_i + \gamma_i\tau_i) - 0.5\,V\,H \qquad (7.4)$$

where: ε_i , γ_i = normal and shear strain, respectively,

σ_i , τ_i = normal and shear stress, respectively,

V = volumetric strain = $\varepsilon_1 + \varepsilon_2 + \varepsilon_3$, and

H = hydrostatic stress = $(\sigma_1 + \sigma_2 + \sigma_3) / 3$.

Using multilayer elastic analysis, overlay response was determined in terms of normal and shear stresses and strains. Applying Equation (7.4), the distortion energy distribution within the overlay was determined. Maximum distortion energy was found to occur under the edge of the tire, at a distance, from the surface, equal to a quarter of the thickness of the overlay. Figure 7.7 shows the variation of maximum distortion energy with overlay thickness. The corresponding repetitions to failure for both CAC and ARHM overlays are obtained from the energy-based fatigue equations included in Figure 7.5. The variation of repetitions to failure with overlay thickness is presented in Figure 7.8. As shown, ARHM overlays are much more resistant to fatigue failure in comparison to CAC overlays of equal thickness.

The application above aimed at demonstrating that the fatigue model developed in Chapter 6 and applied herein is limited to thick surface layers exhibiting tensile strains. For thin layers, it was shown that the use of distortion energy limiting criteria is more appropriate to estimate fatigue life.

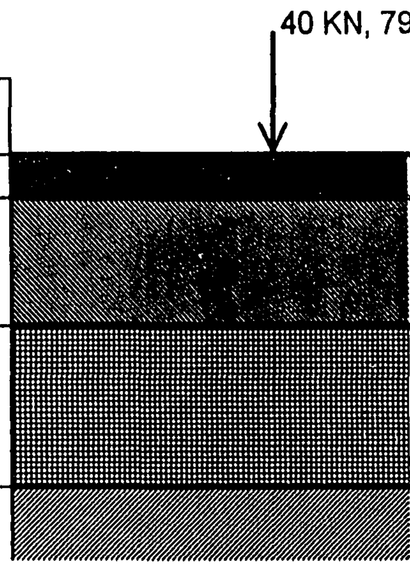
7.6 Summary and Conclusions

In this chapter, an application of the model developed in Chapter 6 is presented. The conventional asphalt concrete (CAC) and asphalt-rubber hot mix (ARHM) are used as thick surface layers of a typical Californian pavement structure. The finite element program Abaqus is used to predict pavement response, namely the tensile radial strain at the bottom of the surface layer. The predicted strain is then used in the new model, in conjunction with layer properties, to determine fatigue life. The application showed that the use of ARHM as surface layer results in longer fatigue life than CAC.

The use of the new model is limited to thick surface layers exhibiting tensile strains. For overlays or thin surface layers, distortion energy limiting criteria was found to be more appropriate to estimate fatigue life.

A direct implication of the applications outlined above is the possibility of developing thickness equivalencies between ARHM and CAC. Since ARHM outperforms CAC of the same thickness, it is possible to use a thinner layer of ARHM as compared to CAC to obtain the same fatigue life. Consequently, thickness equivalency between conventional and CRM mixes can be developed, especially for pavement overlay applications.

Figure 7.1 : Pavement Variables for Spring Conditions (T=10°C)



Thickness (mm)	Layer	Stiffness (MPa)	Poisson's Ratio
130	AC	See below	0.35
300	Base	172	0.40
300	Subbase	103	0.40
Infinite	Subgrade	17	0.45

	AC Stiffness at 10 °C (MPa)
CAC-DG	9524
ARHM-GG	5660

Figure 7.2 : Pavement Variables for Summer Conditions (T=30°C)

40 KN, 791 KPa

Thickness (mm)		Stiffness (MPa)	Poisson's Ratio
130	AC	See below	0.35
300	Base	365	0.40
300	Subbase	242	0.40
Infinite	Subgrade	69	0.45

	AC Stiffness at 30 °C (MPa)
CAC-DG	1854
ARHM-GG	1107

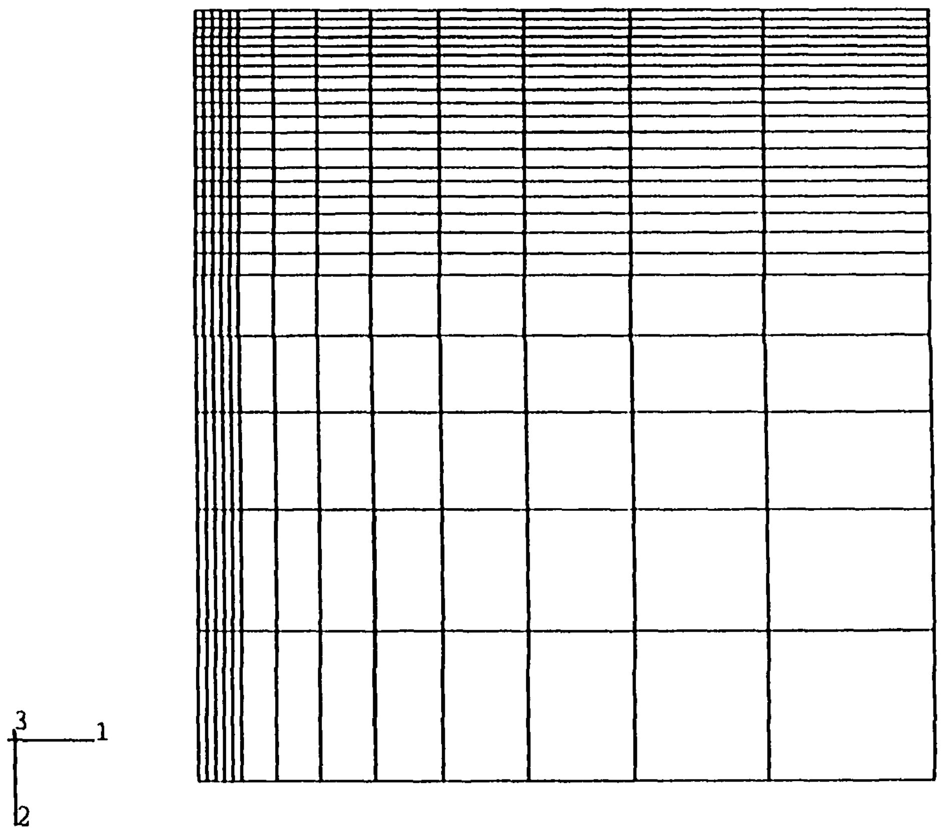


Figure 7.3 : Finite Element Mesh used in Abaqus

Table 7.1 : Abaqus Predicted Tensile Strains

Surface Layer	Tensile Strain at bottom of Surface Layer	
	Spring (10°C)	Summer (30°C)
CAC-DG	0.000140	0.000251
ARHM-GG	0.000199	0.000302

Table 7.2 : Parameters used in Fatigue Model Application

Parameter	CAC-DG		ARHM-GG	
	10°C	30°C	10°C	30°C
E_o (MPa)	9524	1854	5660	1107
ϕ_o (deg.)	9.7	27.9	9.7	27.8
ψ	1.150	1.283	1.038	1.419
a	6.081E+09		4.883E+06	
b	-1.314		-0.845	
c	0.704		0.709	

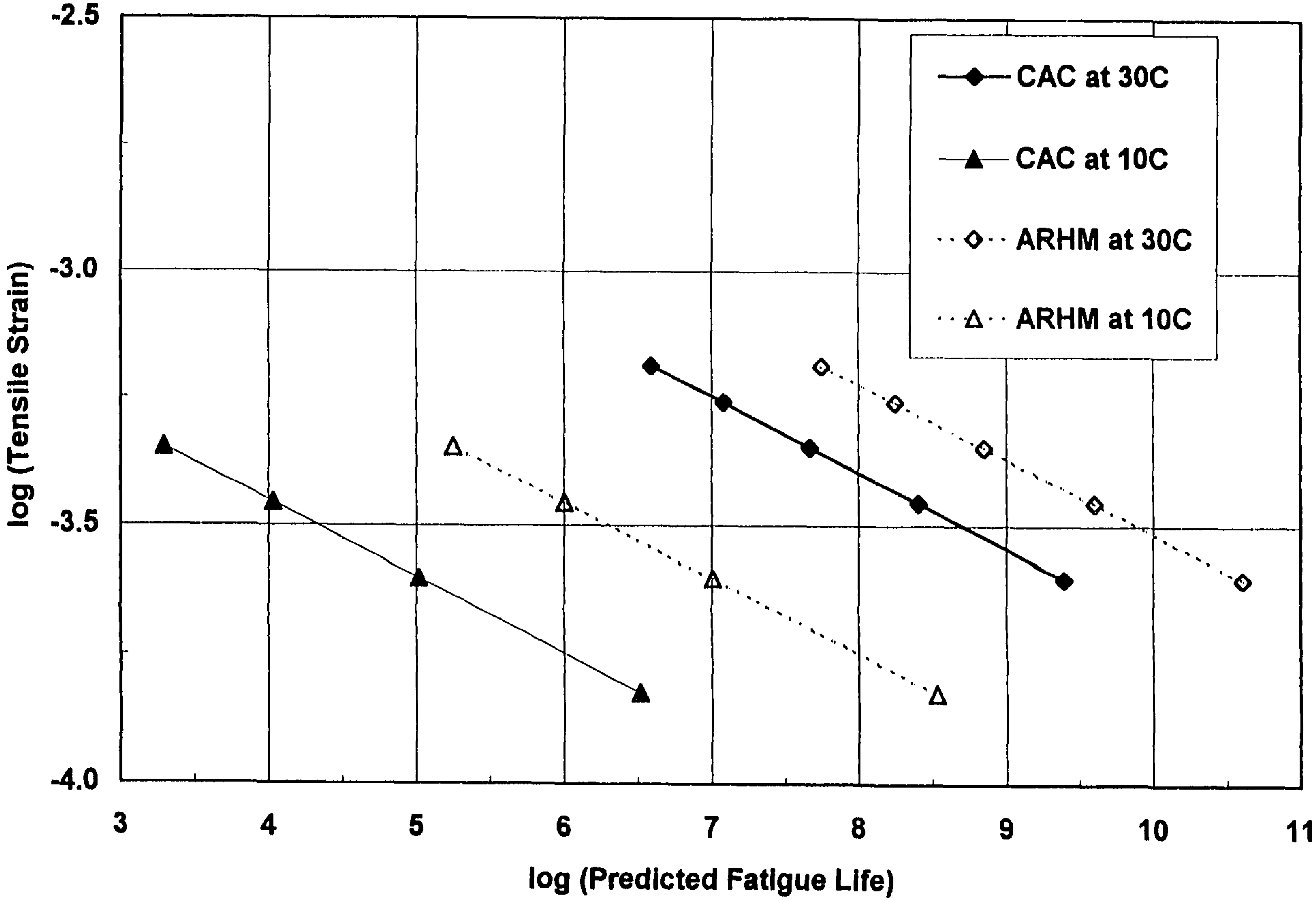


Figure 7.4 : Predicted Fatigue Life for CAC and ARHM using New Model

Table 7.3 : Predicted Fatigue Lives using New Model

Surface Layer	Predicted Fatigue Life	
	Spring (10°C)	Summer (30°C)
CAC-DG	5.24E+06	2.41E+09
ARHM-GG	4.90E+07	1.10E+10
Life Ratio ARHM/CAC	9.3	4.6

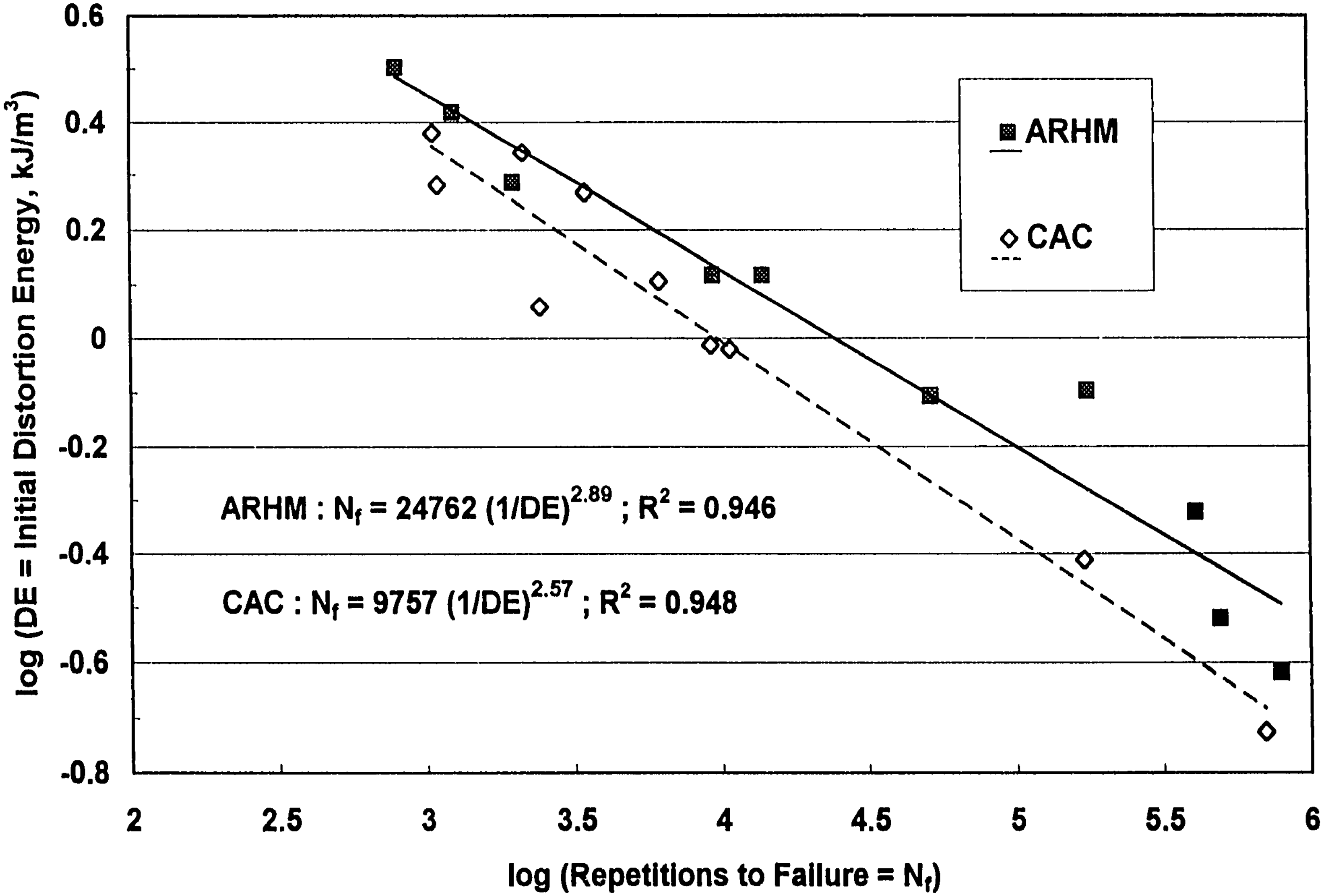


Figure 7.5 : Distortion Energy vs. Fatigue Life for CAC and ARHM at 22°C

Figure 7.6 : Pavement Section for Overlay Application

40 KN, 690 KPa

Thickness (mm)	Layer	Stiffness (MPa)	Poisson's Ratio
Variable	Overlay	See Below	See Below
150	Existing CAC	2415	0.35
500	Base	207	0.30
Infinite	Subgrade	69	0.45

	Overlay	
At 22°C	CAC	ARHM
Stiffness (MPa)	3795	2415
Poisson's Ratio	0.35	0.38

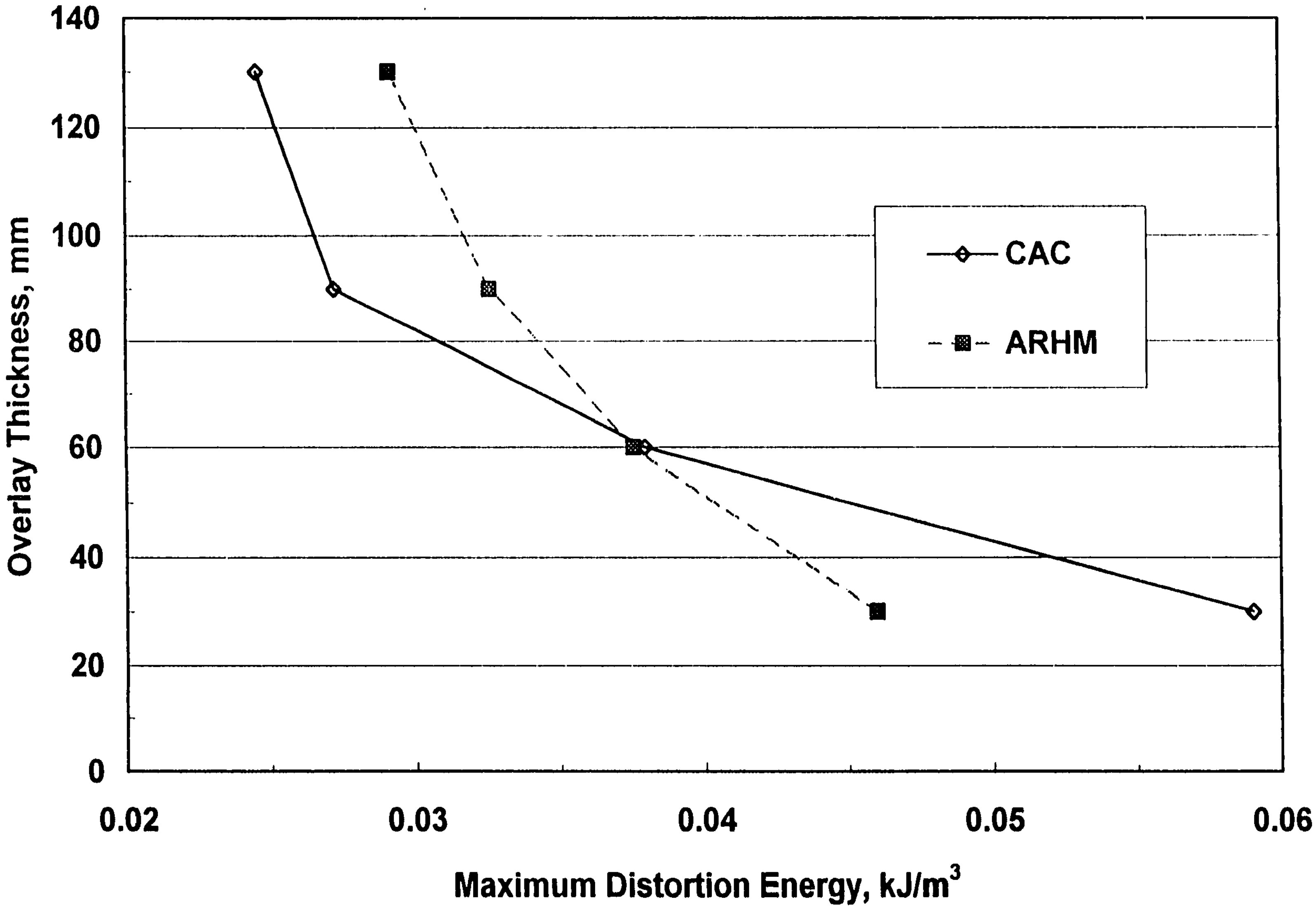


Figure 7.7 : Maximum Distortion Energy Variation with Overlay Thickness

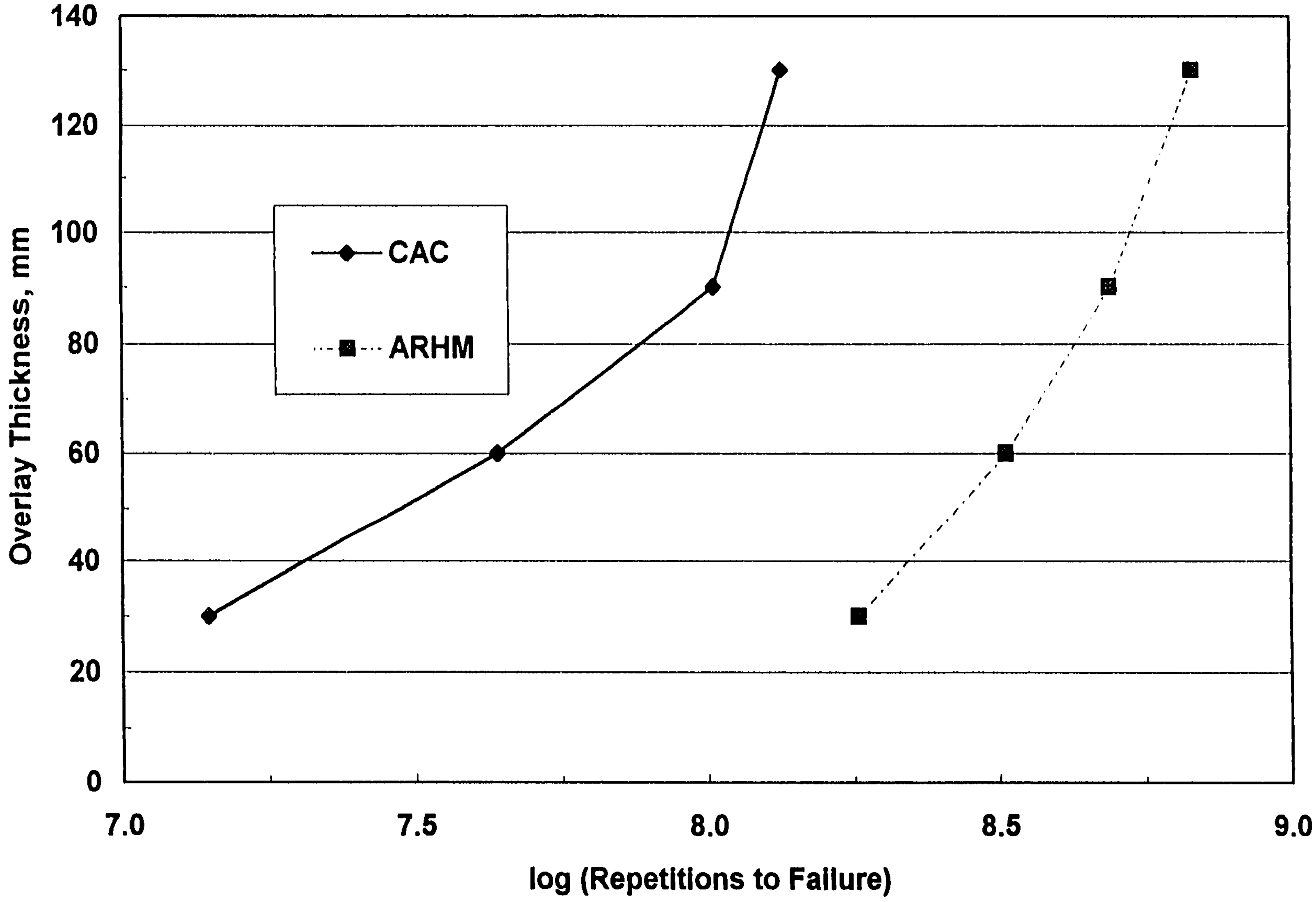


Figure 7.8 : Fatigue Life Variation with Overlay Thickness

CHAPTER EIGHT

SUMMARY, CONCLUSIONS AND FUTURE RESEARCH

In this study, the fatigue behavior of conventional and CRM modified asphalt mixes has been evaluated. In the first part of the study, laboratory tests were performed on specimens obtained from actual pavements, to measure fatigue resistance and material properties of both types of mixes. Experimental results were used to conduct a comparative analysis of mix properties.

Regression equations describing mix properties variation with test temperature were developed. Results showed that CRM mixes are less stiff than conventional mixes, and that the PlusRide mix is in general, stiffer than the asphalt-rubber mix. Mix bimodular behavior was also demonstrated. Compressive stiffness was found to be greater than tensile stiffness, for all mixes. Mix phase angle variation with test temperature was also determined. Regressions revealed that phase angle is better correlated to mix stiffness, a material property, than to temperature, a test variable.

Strain-based fatigue life plots, developed for both types of mixes, showed that fatigue life increases with an increase in test temperature. At a given strain level, CRM mixes had longer fatigue life than conventional control mixes. The Alaskan asphalt-rubber mix (wet process) had longer fatigue life than the PlusRide mix (dry process). Results also showed that, at low temperatures, conventional mixes are more susceptible to strain changes than CRM mixes.

Computation of dissipated energy from tensile strain and stress cycles confirmed the fact that, for controlled-strain testing, the dissipated energy per cycle decreases with increasing applications of load cycles. For both types of mixes, the cumulative dissipated energy associated with fatigue failure increased with increasing temperature and repetitions to failure. Correlations between cumulative dissipated energy and repetitions to failure indicated higher cumulative dissipated energy for the CRM mixes in comparison with the conventional ones. This illustrates the ability of the CRM mixes to dissipate more energy before 50% reduction in flexural stiffness (i.e., fatigue failure) occurs.

The use of cumulative dissipated energy seemed to better represent mix fatigue performance, as shown by the strong correlations found for energy-based fatigue models in comparison to the traditional strain-based models. This is mainly due to the fact that strain-based fatigue equation relies on initial test conditions, whereas the energy-based equation captures the overall viscoelastic mix behavior during a test. In other words, the cumulative dissipated energy to failure is estimated from the fundamental stress-strain relationships with phase shifts from the start of a test to the end.

In the second part of the study, a method of converting controlled-strain test data into equivalent controlled-stress behavior was presented. Examination of stiffness-ratio variation with cycles for the tested beams revealed that two types of controlled-strain stiffness-ratio variations exist. Using a damage expression related to stiffness-ratio, a controlled-stress stiffness-ratio variation with cycles was derived for each type of stiffness variation. Using the predicted variations, fatigue lives for both modes of loading were determined. Results showed that, at a given temperature, controlled-stress mode of loading yielded, as expected, shorter fatigue lives than its controlled-strain counterpart. Validation of the proposed conversions revealed that fatigue equation-related K and n values for ARHM, CAC, ARC and PR mixes fit within the range of values obtained from the literature for controlled-stress conditions. This constituted an implicit verification of the conversions methods proposed in this study.

In the last part of the study, a fatigue life model, applicable to the haversine pattern of loading used in this study, was presented. The model took into account the cumulative dissipated energy to failure, mode-of-loading, and initial phase angle, strain and stiffness of the mix. Analogy with the traditional strain-based fatigue equation revealed that parameter K is temperature-dependent, whereas exponents n and m are independent of mix temperature. Using stiffness, phase angle and energy ratio values predicted from temperature-dependent relationships, the variation of parameter K with temperature was established for all mixes included in this study. A decrease in K was associated with an increase in temperature for conventional as well as CRM mixes.

To demonstrate the application of the newly developed model, the conventional asphalt concrete (CAC) and asphalt-rubber hot mix (ARHM) were used as thick surface layers of a typical Californian pavement structure. The finite element program Abaqus was used to predict pavement response, namely the tensile radial strain at the bottom of the surface layer. The predicted strain was then used in the new model, in conjunction with layer properties, to determine fatigue life. The application showed that the use of ARHM as surface layer results in extended fatigue life in comparison to CAC.

The use of the new model was shown to be limited to thick surface layers exhibiting tensile strains. For overlays or thin surface layers, distortion energy limiting criteria was found to be more appropriate to estimate fatigue life.

In summary, the current study gave insight into the differences in fatigue behavior between conventional unmodified and CRM modified mixes. Experimental results and comparative analyses showed that, in terms of fatigue resistance, CRM mixes outperform their unmodified counterparts. The results from this study suggest that the advantages of incorporating CRM in flexible pavements are twofold: engineering benefits due to the enhanced mix fatigue resistance, and environmental benefits stemming from reducing a critical solid waste problem. However, before the widespread use of CRM mixes, future research should answer questions pertaining to their recyclability and the occupational health hazards from their use.

Since results showed that CRM mixes outperform conventional mixes, future research should also focus on the possibility of developing pavement surface layer thickness equivalencies between conventional and CRM mixes. As evidenced by the enhanced fatigue resistance of the ARHM over the CAC of the same thickness, it is possible to use a thinner layer of ARHM as compared to CAC to obtain the same fatigue life. Consequently, thickness equivalency between conventional and CRM mixes can be developed, especially for pavement overlay applications. The use of an accelerated pavement testing facility should help validate the results of these equivalencies and help obtain data for the life-cycle cost of CRM mixes in comparison to conventional mixes.

Finally, further work should consist of conducting controlled-stress tests on the same mixes included in this research to explicitly validate the mode-of-loading conversion method proposed in this study.

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APPENDIX A

Individual Beam Test Results

Filename : CI1250
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.961 Beam depth (cm) : 4.996 Bulk density (KN/m^3) : 24.07 Deflection (mm) : 0.9652

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.001654	0.001529	1442.4	1560.4	872149	1020736	961025	4.068	487.4	0.019	31.7
10	0.001651	0.001475	970.3	1085.9	587709	736179	656962	3.723	333.2	0.019	31.7
20	0.001541	0.001547	1264.4	1259.5	820712	814368	808990	3.508	410.3	0.019	31.7
30	0.001639	0.001559	1244.5	1308.7	759346	839742	817885	3.645	414.8	0.019	31.7
40	0.001669	0.001532	932.2	1015.6	558612	663071	623184	3.795	316.1	0.019	31.7
50	0.001657	0.001567	1041.7	1101.1	628721	702463	686301	3.673	348.1	0.019	31.7
60	0.001654	0.001567	969.6	1023.1	586309	652743	638291	3.721	323.7	0.019	31.7
70	0.001714	0.001556	845.3	931.1	493330	598589	568065	3.856	288.1	0.019	31.7
80	0.001728	0.001591	1088.0	1181.8	629527	742660	726319	3.836	368.4	0.019	31.7
90	0.001722	0.001570	910.7	998.8	528722	636009	610738	3.820	309.7	0.019	31.7
100	0.001740	0.001547	806.7	907.7	463544	586930	547615	3.797	277.7	0.019	31.7
200	0.001842	0.001624	1007.4	1142.3	546994	703359	686301	3.879	348.1	0.019	31.8
300	0.001892	0.001714	1002.8	1107.5	529963	646330	674745	4.068	342.2	0.019	31.8
400	0.001907	0.001696	578.9	651.2	303566	384052	392932	4.095	199.3	0.019	31.8
500	0.001979	0.001767	943.8	1056.7	476969	598024	639180	4.077	324.2	0.019	31.8
600	0.002020	0.001770	965.2	1101.8	477741	622419	659631	4.083	334.5	0.019	31.8
700	0.002056	0.001794	963.4	1104.2	468522	615510	659631	4.114	334.5	0.019	31.8
800	0.002071	0.001821	862.6	981.2	416479	538865	588509	4.125	298.5	0.019	31.8
1065	0.002149	0.001865	663.2	763.9	308696	409501	455160	4.222	230.8	0.019	31.8
1575	0.002342	0.001982	341.8	404.0	145912	203844	237360	4.515	120.4	0.019	31.8
2000	0.002733	0.002187	538.1	672.2	196901	307324	383155	4.998	194.3	0.019	31.8
2316	0.003117	0.002393	555.2	723.2	178132	302249	402709	5.480	204.2	0.019	31.8
3000	0.004029	0.002920	508.3	701.2	126165	240118	377818	6.490	191.6	0.019	31.8
3286	0.004550	0.003245	488.2	684.6	107293	210953	365373	6.991	185.3	0.019	31.8
4002	0.006487	0.004202	421.6	650.9	64984	154910	328037	7.981	166.4	0.019	31.8
4159	0.006672	0.004497	163.7	242.8	24529	54001	125344	7.140	63.6	0.019	31.8

Filename : Cl2220
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.981 Beam depth (cm) : 4.978 Bulk density (KN/m³) : 24.02 Deflection (mm) : 0.3810

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m³)	Max load (N)	Lag (sec)	Temp (C)
1	0.000751	0.000796	581.5	548.9	774446	689845	920414	0.793	183.1	0.019	32.4
11	0.000724	0.000793	454.5	415.2	627686	523834	707289	0.735	140.7	0.019	32.4
23	0.000727	0.000799	427.6	389.3	588088	487477	664244	0.736	132.1	0.019	32.4
30	0.000748	0.000808	486.0	450.1	649750	557385	761691	0.735	151.5	0.019	32.4
40	0.000739	0.000802	416.1	383.6	563059	478575	650640	0.730	129.4	0.019	32.4
50	0.000736	0.000831	533.2	472.0	724389	567762	816161	0.725	162.3	0.019	32.4
60	0.000748	0.000817	496.1	454.4	663209	556544	773067	0.732	153.7	0.019	32.4
70	0.000751	0.000808	422.9	393.3	563190	486987	664244	0.741	132.1	0.019	32.4
80	0.000730	0.000828	476.6	420.0	652770	506996	727698	0.727	144.7	0.019	32.4
90	0.000754	0.000825	476.4	435.1	631927	527171	741350	0.730	147.4	0.019	32.4
100	0.000745	0.000819	426.5	387.7	572464	473107	661975	0.730	131.7	0.019	32.4
200	0.000757	0.000828	470.5	429.9	621633	518931	732249	0.721	145.6	0.019	32.3
300	0.000775	0.000817	455.7	432.4	588123	529564	723217	0.726	143.8	0.019	32.4
400	0.000769	0.000855	508.3	457.0	661175	534307	784375	0.718	156.0	0.019	32.4
500	0.000754	0.000846	462.0	411.6	612862	486373	709564	0.714	141.1	0.019	32.4
600	0.000751	0.000843	490.2	436.5	652791	517615	752658	0.706	149.7	0.019	32.4
700	0.000751	0.000843	416.4	370.8	554482	439660	639304	0.711	127.1	0.019	32.4
800	0.000763	0.000858	535.0	475.6	701290	554124	820643	0.708	163.2	0.019	32.4
900	0.000739	0.000834	327.2	289.8	442797	347370	501011	0.705	99.6	0.019	32.4
1000	0.000754	0.000858	554.7	487.3	735765	567817	845603	0.705	168.2	0.019	32.4
1060	0.000766	0.000831	406.1	374.1	530322	449988	634767	0.706	126.2	0.019	32.4
2000	0.000763	0.000879	494.0	428.7	647544	487649	748108	0.693	148.8	0.019	32.4
2757	0.000787	0.000891	449.4	396.8	571251	445341	686914	0.683	136.6	0.019	32.3
3000	0.000766	0.000882	428.0	371.6	558867	421298	648371	0.678	128.9	0.019	32.4
3087	0.000760	0.000885	418.5	359.3	550793	406026	630237	0.679	125.3	0.019	32.4
4550	0.000769	0.000909	361.2	305.5	469818	336180	539554	0.666	107.3	0.019	32.4
5000	0.000766	0.000927	410.4	339.1	535893	365952	605298	0.663	120.4	0.019	32.5
5264	0.000784	0.000936	427.2	357.8	545139	382438	634767	0.671	126.2	0.019	32.5
6000	0.000790	0.000942	358.3	300.5	453774	319121	532756	0.673	106.0	0.019	32.5
7000	0.000787	0.000989	433.4	344.6	550848	348308	625701	0.663	124.4	0.019	32.5
8000	0.000799	0.001004	478.9	380.8	599610	379211	691431	0.662	137.5	0.019	32.4
9000	0.000787	0.001016	384.1	297.4	488256	292651	546353	0.655	108.7	0.019	32.4
10000	0.000799	0.001061	544.1	409.6	681302	386106	761691	0.653	151.5	0.019	32.4
10547	0.000793	0.001064	335.6	250.0	423325	235016	467012	0.649	92.9	0.019	32.4
20000	0.000831	0.001267	400.1	262.7	481264	207402	516884	0.639	102.8	0.019	32.4
20616	0.000834	0.001269	384.0	252.4	460276	198845	496481	0.638	98.7	0.019	32.4
30000	0.000852	0.001410	398.7	241.1	467784	171024	489676	0.613	97.4	0.019	32.4
40000	0.000867	0.001594	446.2	242.7	514505	152221	512347	0.615	101.9	0.019	32.4
50000	0.000912	0.001764	467.4	241.6	512567	136948	519152	0.601	103.2	0.019	32.5
60000	0.000930	0.001913	308.4	149.9	331656	78327	328719	0.601	65.4	0.019	32.4
70000	0.000965	0.002149	484.5	217.7	501839	101343	489676	0.583	97.4	0.019	32.4
70653	0.000971	0.002155	458.8	206.9	472259	96013	464744	0.582	92.4	0.019	32.4
74945	0.000983	0.002250	541.9	236.9	551104	105287	537286	0.578	106.9	0.019	32.4
80000	0.000989	0.002369	382.5	159.7	386589	67420	367262	0.590	73.0	0.019	32.2
90000	0.001061	0.002718	366.6	143.1	345591	52659	335518	0.558	66.7	0.019	32.4
100000	0.001076	0.002974	246.1	89.0	228783	29935	213104	0.544	42.4	0.019	32.4
109820	0.001112	0.003150	290.6	102.6	261472	32561	247110	0.536	49.1	0.018	32.4

Filename : CI3240
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.971 Beam depth (cm) : 4.971 Bulk density (KN/m^3) : 24.03 Deflection (mm) : 0.7722

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.001439	0.001314	1479.0	1619.9	1027631	1232688	1245444	3.644	498.7	0.019	32.3
11	0.001499	0.001341	1312.5	1467.1	875665	1094099	1115887	3.464	446.8	0.019	32.3
23	0.001514	0.001311	926.2	1069.3	611842	815541	799475	3.468	320.1	0.019	32.3
30	0.001547	0.001380	1404.6	1574.5	908278	1141260	1195869	3.445	478.8	0.019	32.3
40	0.001547	0.001359	1049.3	1194.2	678454	878837	899729	3.451	360.2	0.019	32.3
50	0.001538	0.001362	983.4	1110.3	639518	815334	840018	3.450	336.3	0.019	32.3
60	0.001565	0.001410	1382.0	1533.9	883387	1088307	1171116	3.463	468.9	0.019	32.3
70	0.001550	0.001389	1085.6	1211.4	700601	872355	922206	3.444	369.3	0.019	32.3
80	0.001562	0.001410	1241.0	1374.7	794718	975367	1050591	3.451	420.7	0.019	32.3
90	0.001559	0.001401	1044.5	1162.4	670228	829882	886214	3.465	354.8	0.019	32.3
100	0.001576	0.001413	1133.3	1264.7	718873	895385	962749	3.462	385.5	0.019	32.3
200	0.001645	0.001463	1056.7	1187.9	642386	811886	900832	3.500	360.7	0.019	32.3
300	0.001681	0.001490	1086.7	1225.7	646565	822711	927860	3.525	371.5	0.019	32.3
400	0.001722	0.001570	1172.0	1285.4	680468	818574	987571	3.570	395.4	0.019	32.3
500	0.001779	0.001570	1064.7	1206.1	598507	768034	910967	3.622	364.7	0.019	32.3
600	0.001839	0.001588	948.5	1098.0	515898	691293	819747	3.688	328.2	0.019	32.3
700	0.001901	0.001627	1065.1	1244.5	560219	764931	924482	3.755	370.2	0.019	32.3
800	0.001904	0.001621	789.4	927.3	414589	572030	686894	3.803	275.0	0.019	32.3
900	0.001952	0.001648	707.8	838.4	362629	508734	618199	3.866	247.5	0.019	32.3
1000	0.002038	0.001681	846.9	1027.1	415500	611118	747694	3.932	299.4	0.019	32.3
1059	0.002065	0.001681	800.1	983.1	387437	584937	710530	3.977	284.5	0.019	32.3
1937	0.002426	0.001827	640.9	851.0	264230	465916	588923	4.385	235.8	0.019	32.4
2000	0.002420	0.001830	488.6	646.2	201927	353155	448168	4.419	179.4	0.019	32.4
3000	0.002837	0.001961	555.6	803.9	195859	409990	529246	4.833	211.9	0.019	32.4
4000	0.003338	0.002128	663.9	1041.4	198928	489476	653108	5.340	261.5	0.019	32.4
4052	0.003367	0.002113	612.1	975.5	181766	461717	605815	5.371	242.6	0.019	32.4
5000	0.003883	0.002274	601.9	1027.8	155006	452043	611449	5.861	244.8	0.019	32.5
6000	0.004982	0.002521	487.4	963.3	97826	382121	521359	6.723	208.7	0.019	32.4
7000	0.005939	0.002753	444.0	957.8	74769	347846	488704	7.068	195.7	0.019	32.4
7108	0.006037	0.002768	368.1	802.7	60966	289955	406502	7.087	162.8	0.019	32.4

Filename : Cl4230
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.948 Beam depth (cm) : 4.961 Bulk density (KN/m^3) : 24.02 Deflection (mm) : 0.5740

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000876	0.001049	2153.7	1798.8	2458274	1714924	2128142	1.572	626.7	0.016	32.3
11	0.000873	0.001061	2005.5	1650.6	2297000	1555926	1965902	1.518	578.9	0.017	32.3
20	0.000879	0.001076	1837.8	1501.8	2090564	1396031	1794424	1.525	528.4	0.017	32.3
30	0.000882	0.001061	1817.3	1511.0	2060295	1424369	1791321	1.518	527.5	0.017	32.3
40	0.000888	0.001067	1848.8	1538.9	2081945	1442572	1823521	1.524	537.0	0.017	32.3
50	0.000888	0.001079	1874.1	1542.8	2110422	1430161	1837242	1.514	541.0	0.017	32.3
60	0.000861	0.001043	1392.3	1149.7	1616740	1102304	1367210	1.515	402.6	0.017	32.3
70	0.000873	0.001058	1581.4	1305.2	1811179	1233791	1552478	1.515	457.2	0.017	32.3
80	0.000906	0.001061	1791.2	1529.6	1977279	1441813	1791321	1.510	527.5	0.017	32.3
90	0.000900	0.001076	1769.5	1480.3	1966178	1376035	1750020	1.515	515.4	0.017	32.3
100	0.000906	0.001073	1729.7	1460.6	1909363	1361487	1719406	1.501	506.3	0.017	32.4
200	0.000894	0.001064	1528.8	1284.7	1710167	1207659	1515728	1.485	446.3	0.017	32.4
300	0.000897	0.001076	1478.0	1232.3	1647767	1145535	1459120	1.475	429.7	0.017	32.4
400	0.000888	0.001073	1426.2	1180.6	1606121	1100511	1402443	1.458	413.0	0.018	32.6
500	0.000918	0.001076	1465.8	1250.6	1597020	1162497	1465188	1.455	431.5	0.018	32.6
600	0.000891	0.001067	1169.8	977.0	1312946	915863	1155947	1.452	340.4	0.018	32.6
700	0.000909	0.001067	1137.4	969.0	1251374	908278	1136020	1.470	334.5	0.018	32.6
800	0.000903	0.001082	1047.8	874.6	1160429	808508	1035008	1.483	304.8	0.018	32.6
900	0.000951	0.001082	1168.4	1026.7	1229103	949166	1186561	1.508	349.4	0.018	32.6
1000	0.000954	0.001085	1056.8	928.9	1108027	856359	1073276	1.525	316.1	0.018	32.6
1059	0.000957	0.001094	1184.9	1036.4	1238756	947649	1200351	1.509	353.5	0.018	32.6
2000	0.001112	0.001126	901.5	889.6	811128	789822	972195	1.695	286.3	0.018	32.6
2119	0.001118	0.001123	835.7	831.3	747832	739971	904831	1.711	266.5	0.018	32.6
3000	0.001290	0.001168	1109.8	1225.9	860082	1049419	1264681	1.854	372.4	0.018	32.6
3789	0.001365	0.001144	722.1	861.3	529074	752658	852774	1.925	251.1	0.018	32.6
4000	0.001410	0.001183	885.9	1055.4	628493	892144	1045696	1.929	307.9	0.018	32.6
5000	0.001410	0.001112	510.8	647.7	362394	582759	620074	1.868	182.6	0.018	32.6
6000	0.001451	0.001055	492.0	676.8	339000	641580	618544	1.740	182.1	0.018	32.6
6313	0.001436	0.001016	373.2	527.6	259866	519200	474624	1.695	139.8	0.018	32.6
7000	0.001401	0.000983	463.3	659.9	330795	671015	590984	1.504	174.0	0.018	32.5
8000	0.001034	0.000742	209.5	292.0	202637	393525	264871	0.880	78.0	0.018	32.6
8873	0.000635	0.000513	224.3	277.8	353424	541995	269463	0.371	79.4	0.017	32.5
9000	0.000471	0.000414	19.9	22.6	42229	54563	22966	0.320	6.8	0.017	32.5
9443	0.000343	0.000322	28.7	30.6	83795	95006	32152	0.185	9.5	0.016	32.5

Filename : CI5230
Material : Conventional Asphalt Concrete, California

Beam width (cm) : 4.907 Beam depth (cm) : 4.958 Bulk density (KN/m^3) : 23.63 Deflection (mm) : 0.5766

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.001240	0.000766	1525.7	2469.5	1230689	3224585	2039541	2.661	597.4	0.017	32.3
11	0.001258	0.000778	1344.2	2173.5	1069001	2794612	1796354	2.549	526.2	0.018	32.3
23	0.001255	0.000775	1312.5	2125.2	1046178	2742900	1754778	2.552	514.0	0.018	32.3
30	0.001234	0.000745	978.3	1620.0	792994	2174614	1319151	2.540	386.4	0.018	32.3
40	0.001252	0.000763	1061.9	1742.2	848499	2283762	1426920	2.546	417.9	0.018	32.3
50	0.001258	0.000754	1061.0	1769.7	843741	2347403	1434643	2.526	420.2	0.018	32.3
60	0.001278	0.000784	1157.3	1887.6	905245	2408561	1551582	2.535	454.5	0.018	32.3
70	0.001293	0.000778	1156.8	1923.6	894488	2473305	1562407	2.534	457.6	0.018	32.3
80	0.001314	0.000787	1245.9	2081.2	948063	2645474	1685552	2.539	493.7	0.018	32.3
90	0.001255	0.000760	982.8	1622.6	783410	2135382	1323771	2.536	387.7	0.018	32.3
100	0.001278	0.000784	1010.3	1648.0	790305	2102768	1354592	2.526	396.8	0.018	32.3
200	0.001284	0.000781	1130.6	1859.9	880354	2382291	1520830	2.470	445.4	0.018	32.3
300	0.001302	0.000787	1161.1	1922.0	891661	2443105	1565441	2.451	458.5	0.018	32.3
400	0.001267	0.000760	845.0	1408.2	667181	1853307	1142157	2.434	334.5	0.019	32.4
500	0.001299	0.000772	975.7	1642.5	750934	2128073	1323771	2.420	387.7	0.018	32.4
600	0.001272	0.000766	763.8	1269.2	600320	1657213	1031354	2.395	302.1	0.019	32.4
700	0.001299	0.000775	793.1	1329.8	610380	1716441	1074448	2.386	314.7	0.019	32.4
800	0.001284	0.000766	732.8	1228.9	570561	1604673	992880	2.369	290.8	0.019	32.4
900	0.001275	0.000763	722.3	1207.5	566307	1582885	977435	2.367	286.3	0.019	32.4
1000	0.001317	0.000811	983.0	1597.4	746315	1970729	1316118	2.362	385.5	0.019	32.4
1060	0.001335	0.000796	993.9	1667.7	744522	2096011	1346869	2.368	394.5	0.019	32.4
2000	0.001305	0.000781	674.5	1127.6	516787	1444296	912829	2.282	267.4	0.019	32.5
2199	0.001302	0.000769	614.6	1041.1	471983	1354109	835812	2.257	244.8	0.019	32.5
3000	0.001299	0.000805	683.4	1103.6	526013	1371622	912829	2.208	267.4	0.019	32.5
4000	0.001335	0.000808	737.9	1219.9	552731	1510557	994397	2.143	291.3	0.019	32.5
4474	0.001317	0.000817	676.8	1091.8	513822	1337078	903590	2.109	264.7	0.019	32.5
5000	0.001311	0.000787	641.1	1068.5	488973	1358246	866633	2.088	253.8	0.019	32.5
6000	0.001296	0.000814	590.8	941.4	455760	1157119	785065	2.034	229.9	0.019	32.5
7000	0.001296	0.000814	617.4	983.8	476307	1209314	820436	1.988	240.3	0.019	32.5
8000	0.001323	0.000814	588.5	957.0	444762	1176425	788099	1.951	230.8	0.019	32.5
9000	0.001299	0.000822	645.1	1019.0	496488	1238963	854291	1.897	250.2	0.018	32.5
9688	0.001308	0.000822	638.7	1015.9	488242	1235239	848154	1.865	248.4	0.019	32.5
10000	0.001299	0.000831	702.6	1098.0	540802	1320668	926688	1.854	271.4	0.019	32.5
17739	0.001147	0.000805	566.7	808.0	493937	1004326	720390	1.457	211.0	0.018	32.4
19679	0.001135	0.000787	600.0	865.9	528502	1100718	766586	1.361	224.5	0.018	32.4
20000	0.001135	0.000781	609.0	885.6	536383	1134296	780445	1.363	228.6	0.018	32.4
23291	0.001046	0.000748	566.4	792.0	541513	1058934	714253	1.177	209.2	0.018	32.5

Filename : CI6218
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.928 Beam depth (cm) : 4.907 Bulk density (KN/m^3) : 23.67 Deflection (mm) : 0.3353

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000584	0.000554	1297.4	1367.1	2221224	2466548	2501437	0.671	414.8	0.016	32.4
11	0.000539	0.000542	1053.5	1047.7	1953216	1931772	1973970	0.645	327.3	0.016	32.4
23	0.000551	0.000542	964.5	980.5	1749675	1807800	1827106	0.667	303.0	0.016	32.4
30	0.000560	0.000557	1141.6	1147.7	2037748	2059605	2150688	0.666	356.6	0.016	32.4
40	0.000533	0.000548	902.4	877.9	1691757	1601019	1672175	0.643	277.3	0.017	32.4
50	0.000539	0.000584	1235.8	1141.2	2291140	1953905	2229498	0.652	369.7	0.016	32.4
60	0.000536	0.000581	1177.3	1086.7	2194816	1870131	2123453	0.648	352.1	0.016	32.4
70	0.000533	0.000584	1205.0	1100.5	2259147	1884266	2161583	0.637	358.4	0.016	32.4
80	0.000536	0.000581	1142.6	1054.7	2130141	1815040	2060916	0.625	341.8	0.017	32.4
90	0.000542	0.000560	978.2	947.0	1803594	1690309	1808076	0.635	299.8	0.017	32.4
100	0.000533	0.000572	1048.2	977.3	1965213	1708098	1900538	0.627	315.2	0.017	32.4
200	0.000536	0.000581	990.3	914.1	1846343	1573232	1786357	0.640	296.2	0.017	32.4
300	0.000539	0.000569	990.4	938.5	1836207	1648939	1810834	0.636	300.3	0.017	32.4
400	0.000548	0.000560	912.8	893.4	1664729	1594676	1696584	0.629	281.3	0.017	32.4
500	0.000527	0.000569	934.2	865.7	1771119	1521037	1688448	0.626	280.0	0.017	32.4
600	0.000545	0.000569	953.8	913.8	1748986	1605570	1753743	0.622	290.8	0.017	32.4
700	0.000527	0.000566	859.6	800.8	1629771	1414371	1557925	0.612	258.3	0.017	32.4
800	0.000536	0.000587	1004.7	918.0	1873165	1563786	1802629	0.618	298.9	0.017	32.4
900	0.000530	0.000575	942.5	869.3	1776910	1511453	1699342	0.612	281.8	0.017	32.4
1000	0.000542	0.000578	923.8	866.6	1703272	1499111	1680312	0.608	278.6	0.017	32.4
1060	0.000545	0.000581	1032.7	969.2	1893781	1667832	1878750	0.615	311.5	0.017	32.4
2000	0.000548	0.000605	934.4	846.9	1704099	1400030	1669417	0.613	276.8	0.017	32.4
3000	0.000542	0.000590	951.7	874.8	1754846	1482701	1712925	0.601	284.0	0.017	32.4
4000	0.000542	0.000599	962.3	871.3	1774290	1454707	1718372	0.594	284.9	0.017	32.4
5000	0.000530	0.000593	767.8	686.7	1447398	1158084	1362176	0.585	225.9	0.017	32.4
6000	0.000527	0.000608	940.7	816.2	1783530	1342663	1642251	0.565	272.3	0.017	32.4
6387	0.000527	0.000602	866.0	758.9	1641975	1260682	1519865	0.575	252.0	0.017	32.4
7000	0.000524	0.000599	838.5	734.2	1598744	1225793	1470910	0.555	243.9	0.017	32.4
8000	0.000557	0.000590	823.7	778.0	1478288	1318600	1503593	0.584	249.3	0.017	32.4
9000	0.000527	0.000623	1031.9	873.9	1956456	1403270	1778152	0.561	294.9	0.017	32.4
10000	0.000554	0.000608	1042.2	950.3	1880404	1563234	1867924	0.568	309.7	0.017	32.4
20000	0.000557	0.000641	967.4	841.5	1736161	1313429	1691206	0.558	280.4	0.017	32.3
20047	0.000536	0.000626	807.3	692.0	1505179	1105820	1400237	0.559	232.2	0.017	32.3
30000	0.000533	0.000608	712.1	624.9	1335079	1027907	1250684	0.533	207.4	0.018	32.3
40000	0.000533	0.000611	667.4	582.8	1251305	953992	1169116	0.507	193.9	0.018	32.3
50000	0.000530	0.000614	722.7	624.5	1362452	1017288	1258889	0.490	208.7	0.017	32.3
53791	0.000530	0.000602	568.4	500.9	1071621	832089	1000533	0.492	165.9	0.017	32.3
60000	0.000536	0.000617	684.5	595.2	1276058	964886	1196351	0.482	198.4	0.018	32.3
70000	0.000504	0.000602	525.8	439.9	1043972	730732	899935	0.452	149.2	0.018	32.3
80000	0.000480	0.000587	635.5	519.4	1324598	884697	1073965	0.374	178.1	0.018	32.3
83851	0.000438	0.000569	680.4	523.7	1553306	920069	1112026	0.324	184.4	0.017	32.3
90000	0.000358	0.000507	641.7	453.0	1794562	894213	997844	0.221	165.5	0.017	32.3

Filename : C/7250
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.971 Beam depth (cm) : 5.004

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)
1	0.001830	0.001758	1632.7	1699.2
11	0.001907	0.001785	1274.1	1361.3
23	0.001925	0.001794	1130.2	1212.8
30	0.001952	0.001779	1066.7	1170.4
40	0.001922	0.001824	1200.6	1265.3
50	0.001925	0.001797	965.6	1034.5
60	0.001955	0.001830	1360.9	1454.0
70	0.001940	0.001818	1015.6	1083.8
80	0.001976	0.001848	1264.2	1351.9
90	0.001979	0.001836	1157.0	1247.1
100	0.001979	0.001833	1202.6	1298.4
200	0.001985	0.001862	1006.9	1073.0
300	0.001985	0.001877	1060.5	1121.1
400	0.001997	0.001860	850.0	912.7
500	0.002014	0.001895	1009.5	1073.0
600	0.002056	0.001919	965.6	1034.6
700	0.002092	0.001901	824.3	907.0
800	0.002056	0.001860	432.2	477.9
900	0.002137	0.001913	910.1	1016.4
1000	0.002163	0.001940	1002.3	1117.7
1060	0.002146	0.001889	631.8	717.5
2000	0.002277	0.001898	404.8	485.5
3000	0.002473	0.001988	908.3	1130.2
4000	0.002777	0.001967	228.6	322.8
5000	0.003126	0.002009	158.6	246.9
5242	0.003174	0.002006	120.5	190.6

Bulk density (KN/m^3) : 23.88				Deflection (mm) : 0.9906		
Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
892351	966472	1038594	4.039	544.2	0.019	32.3
668050	762656	820919	4.861	430.1	0.019	32.3
587082	676034	729698	4.823	382.3	0.019	32.3
546539	657893	696119	4.820	364.7	0.019	32.3
624625	693775	768379	4.747	402.6	0.019	32.3
501632	575726	622991	4.725	326.4	0.019	32.3
696188	794649	876837	4.711	459.4	0.019	32.3
523503	596238	653963	4.687	342.7	0.019	32.3
639884	731697	814851	4.724	427.0	0.019	32.3
584717	679392	748590	4.679	392.2	0.019	32.3
607760	708461	778721	4.674	408.0	0.019	32.4
507369	576119	647944	4.518	339.5	0.019	32.4
534363	597176	679778	4.433	356.2	0.019	32.4
425752	490834	548987	4.394	287.6	0.019	32.4
501142	566162	648799	4.310	339.9	0.019	32.4
469618	539106	622991	4.315	326.4	0.019	32.4
394056	477079	538658	4.311	282.2	0.019	32.4
210208	257025	283095	4.324	148.3	0.019	32.5
425932	531267	598893	4.317	313.8	0.019	32.4
463275	576174	659128	4.284	345.4	0.019	32.5
294465	379770	419051	4.284	219.6	0.019	32.4
177808	255777	275352	4.239	144.3	0.019	32.4
367235	568651	628148	4.195	329.1	0.019	32.4
82313	164135	166935	4.488	87.5	0.019	32.4
50747	122924	120469	4.768	63.1	0.019	32.4
37956	95048	92069	4.854	48.2	0.019	32.4

Filename : CA1400
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.882 Beam depth (cm) : 4.890 Bulk density (KN/m^3) : 23.94 Deflection (mm) : 0.3917

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000766	0.000775	2772.9	2740.9	3620702	3537618	4450171	1.282	844.8	0.01	23.3
12	0.000784	0.000694	2561.4	2891.2	3268299	4164097	4384875	1.249	832.4	0.01	23.3
22	0.000775	0.000727	2563.2	2731.3	3308359	3756465	4269108	1.260	810.4	0.01	23.3
32	0.000784	0.000736	2535.6	2699.9	3235410	3668140	4221602	1.262	801.4	0.01	23.3
42	0.000787	0.000751	2622.2	2747.1	3333250	3658280	4331439	1.291	822.3	0.01	23.3
52	0.000796	0.000694	2465.9	2825.7	3099303	4069774	4251250	1.290	807.1	0.01	23.3
65	0.000784	0.000730	2552.3	2739.9	3256715	3752811	4266074	1.287	809.9	0.01	23.3
128	0.000796	0.000736	2503.1	2705.7	3145982	3676138	4197814	1.283	796.9	0.01	23.3
257	0.000817	0.000679	2350.2	2824.3	2878387	4156996	4141413	1.297	786.2	0.01	23.3
319	0.000805	0.000775	2458.5	2553.0	3055588	3295189	4043435	1.284	767.6	0.01	23.3
348	0.000817	0.000748	2415.6	2636.9	2958438	3525482	4070187	1.302	772.7	0.01	23.3
358	0.000814	0.000748	2426.8	2639.5	2983191	3529068	4082047	1.312	774.9	0.01	23.3
515	0.000822	0.000703	2328.4	2723.1	2831087	3872094	4052329	1.316	769.3	0.01	23.3
1024	0.000846	0.000757	2269.8	2537.8	2682017	3352970	3868302	1.360	734.3	0.011	23.3
2051	0.000921	0.000819	2113.3	2374.6	2295070	2897693	3610015	1.371	685.3	0.011	23.3
2511	0.000912	0.000781	2065.3	2412.1	2264939	3089581	3592226	1.410	681.9	0.011	23.3
3402	0.000933	0.000784	1981.6	2358.3	2124487	3009116	3476390	1.400	659.9	0.011	23.3
4097	0.000945	0.000811	1932.4	2252.0	2045609	2778478	3357658	1.410	637.4	0.011	23.3
4388	0.000951	0.000796	1875.0	2240.2	1972453	2815573	3295327	1.396	625.6	0.011	23.3
5701	0.000918	0.000837	1820.0	1994.9	1983002	2382360	3072688	1.300	583.3	0.011	23.3
8195	0.000861	0.000808	1616.1	1723.5	1876612	2134140	2692635	1.117	511.2	0.012	23.3
9625	0.000751	0.000852	1672.6	1473.7	2227361	1729266	2529362	0.882	480.2	0.011	23.3
11698	0.000465	0.000819	1392.2	789.8	2994843	963714	1626875	0.412	308.8	0.011	23.3

Filename : CA2467
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.879   Beam depth (cm) : 4.920   Bulk density (KN/m^3) : 23.91   Deflection (mm) : 0.2667

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000558	0.000557	1545.5	1547.6	2769790	2777168	3643594	0.559	479.6	0.011	23.7
12	0.000548	0.000547	1508.1	1512.3	2750553	2765585	3557958	0.548	468.3	0.011	23.7
22	0.000559	0.000548	1505.9	1536.6	2691601	2802473	3583676	0.552	471.7	0.011	23.7
32	0.000561	0.000555	1520.3	1536.6	2710011	2768549	3600776	0.565	474.0	0.011	23.7
42	0.000554	0.000555	1543.2	1539.0	2787924	2772962	3630769	0.568	477.9	0.011	23.7
52	0.000552	0.000557	1560.1	1547.6	2826123	2780891	3660693	0.572	481.8	0.011	23.7
65	0.000555	0.000561	1523.8	1507.6	2745520	2687464	3570783	0.572	470.0	0.011	23.7
128	0.000557	0.000576	1536.5	1484.8	2760965	2578385	3557958	0.577	468.3	0.011	23.7
256	0.000556	0.000571	1512.0	1472.6	2720698	2580454	3515140	0.579	462.7	0.011	23.7
318	0.000559	0.000566	1504.6	1486.8	2689326	2626030	3523690	0.583	463.8	0.011	23.7
347	0.000571	0.000562	1488.5	1510.2	2608447	2685051	3532240	0.582	464.9	0.011	23.7
357	0.000570	0.000562	1476.8	1496.4	2591417	2660505	3502315	0.583	461.0	0.011	23.7
406	0.000571	0.000571	1512.0	1512.0	2649611	2649611	3562233	0.581	468.9	0.011	23.7
435	0.000557	0.000565	1480.0	1460.5	2656023	2586383	3463772	0.583	455.9	0.011	23.7
512	0.000574	0.000557	1462.6	1507.6	2546392	2705391	3498040	0.584	460.4	0.011	23.7
1024	0.000579	0.000569	1443.5	1468.1	2493715	2579351	3429504	0.598	451.4	0.011	23.6
2051	0.000587	0.000571	1366.3	1403.8	2327476	2456689	3262507	0.618	429.4	0.012	23.6
4096	0.000601	0.000573	1329.1	1394.8	2210813	2434693	3206865	0.632	422.1	0.012	23.6
8195	0.000609	0.000585	1275.0	1328.5	2092150	2271765	3065586	0.638	403.5	0.012	23.7
12675	0.000623	0.000577	1195.9	1290.1	1920258	2234463	2924307	0.635	384.9	0.012	23.8
16385	0.000624	0.000580	1171.9	1259.2	1879439	2169719	2860046	0.632	376.5	0.012	23.9
18048	0.000626	0.000593	1150.3	1213.9	1838207	2047057	2783029	0.629	366.3	0.012	23.9
25499	0.000630	0.000596	1128.0	1192.8	1789666	2001343	2731592	0.621	359.6	0.012	24.1
26229	0.000630	0.000591	1044.5	1113.0	1659282	1883990	2538946	0.622	334.2	0.013	24.2
90334	0.000647	0.000581	845.3	940.8	1307292	1618877	2097942	0.560	276.2	0.013	25.3
90629	0.000659	0.000581	848.4	961.5	1288193	1654662	2123660	0.562	279.5	0.013	25.3
133330	0.000660	0.000579	777.8	886.8	1178287	1532069	1952388	0.540	257.0	0.013	25.8
145050	0.000677	0.000574	750.7	885.0	1108509	1540895	1913845	0.535	251.9	0.013	26.0
162560	0.000670	0.000581	736.1	849.4	1097891	1461740	1858203	0.514	244.6	0.013	26.3
163390	0.000673	0.000577	751.4	875.5	1116921	1516348	1905295	0.517	250.8	0.013	26.3

Filename : CC5390
Material : Conventional Asphalt Concrete, California

Beam width (cm) : 4.839 Beam depth (cm) : 4.935 Bulk density (KN/m^3) : 23.60 Deflection (mm) : 0.7064

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.001603	0.001231	2646.4	3447.3	1650663	2801094	2655196	3.801	926.5	0.012	23.7
11	0.001679	0.001207	2297.6	3196.8	1368313	2648852	2370915	3.603	827.3	0.012	23.7
22	0.001696	0.001229	2262.0	3120.1	1334045	2538325	2325684	3.620	811.5	0.013	23.7
29	0.001731	0.001225	2226.5	3147.4	1285986	2569904	2312790	3.651	807.1	0.013	23.7
39	0.001730	0.001217	2110.0	2998.4	1219794	2463170	2196471	3.643	766.5	0.013	23.7
49	0.001746	0.001216	2119.3	3043.9	1213658	2503575	2215846	3.666	773.2	0.013	23.7
59	0.001760	0.001225	2081.9	2991.2	1183182	2442278	2177096	3.656	759.7	0.013	23.7
69	0.001772	0.001234	2082.4	2990.3	1175460	2423868	2177096	3.655	759.7	0.013	23.7
79	0.001788	0.001213	2054.1	3028.2	1148845	2496817	2170684	3.656	757.4	0.013	23.7
89	0.001788	0.001219	2015.3	2956.4	1127195	2425730	2125453	3.657	741.7	0.013	23.7
99	0.001791	0.001223	1980.2	2899.1	1105682	2370018	2086634	3.661	728.2	0.013	23.7
202	0.001840	0.001225	1905.0	2862.2	1035284	2336991	2028509	3.612	707.9	0.013	23.7
299	0.001858	0.001222	1793.3	2727.0	965162	2232049	1918672	3.552	669.5	0.013	23.7
402	0.001871	0.001220	1745.1	2676.4	932549	2193231	1873509	3.477	653.7	0.013	23.7
502	0.001895	0.001244	1743.7	2656.4	920069	2135106	1867028	3.422	651.5	0.013	23.7
567	0.001886	0.001231	1637.2	2509.4	867943	2038920	1757191	3.335	613.2	0.013	23.7
599	0.001885	0.001213	1562.5	2428.1	828986	2002101	1686103	3.298	588.4	0.013	23.7
644	0.001873	0.001219	1575.4	2420.9	841190	1986312	1692585	3.203	590.6	0.013	23.7
703	0.001842	0.001226	1614.1	2424.1	876492	1976865	1718441	3.055	599.6	0.013	23.7
747	0.001798	0.001222	1529.3	2251.1	850360	1842482	1615085	2.952	563.6	0.013	23.7
791	0.001782	0.001234	1565.7	2261.6	878630	1833243	1640941	2.857	572.6	0.013	23.7
802	0.001767	0.001229	1562.6	2246.4	884284	1827520	1634460	2.840	570.4	0.013	23.7
847	0.001758	0.001222	1555.8	2238.9	884904	1832484	1627978	2.747	568.1	0.013	23.7
906	0.001694	0.001217	1452.3	2021.1	857255	1660385	1498766	2.628	523.0	0.013	23.7
950	0.001687	0.001223	1514.6	2088.3	897936	1707133	1556891	2.527	543.3	0.013	23.7
1006	0.001636	0.001201	1465.4	1996.3	895729	1662316	1498766	2.412	523.0	0.013	23.7
1050	0.001606	0.001185	1411.3	1913.7	878699	1615636	1440641	2.307	502.7	0.013	23.7
1094	0.001527	0.001155	1349.7	1785.1	883801	1545928	1363142	2.180	475.7	0.013	23.7
1105	0.001532	0.001140	1334.2	1792.8	871045	1572956	1356660	2.153	473.4	0.013	23.7
1150	0.001489	0.001119	1340.0	1782.5	900211	1592952	1356660	2.008	473.4	0.013	23.7
1204	0.001359	0.001022	1142.4	1518.8	840776	1486010	1156360	1.817	403.5	0.013	23.7
1248	0.001314	0.001006	1208.9	1579.6	919931	1570612	1214554	1.635	423.8	0.013	23.7
1259	0.001246	0.000948	1071.1	1407.9	859875	1485735	1078861	1.593	376.5	0.013	23.7
1347	0.001042	0.000812	985.4	1263.8	946132	1556339	981986	1.142	342.7	0.012	23.7
1358	0.001031	0.000803	1004.4	1289.4	974126	1605639	1001361	1.095	349.4	0.012	23.7
1369	0.000992	0.000805	1015.8	1252.8	1023632	1557098	994880	1.040	347.2	0.012	23.7

Filename : CC2390
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.856 Beam depth (cm) : 4.915

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)
1	0.001469	0.001384	3326.1	3530.2
13	0.001514	0.001383	3017.7	3303.9
20	0.001532	0.001365	2916.7	3273.4
29	0.001550	0.001371	2899.9	3278.2
39	0.001572	0.001380	2854.9	3252.7
49	0.001593	0.001377	2906.3	3362.3
59	0.001578	0.001365	2712.7	3136.3
69	0.001581	0.001368	2709.7	3131.8
79	0.001596	0.001371	2690.4	3132.1
89	0.001593	0.001354	2603.4	3061.7
99	0.001600	0.001366	2655.8	3110.5
199	0.001636	0.001374	2383.1	2838.1
299	0.001691	0.001389	2325.8	2832.3
399	0.001715	0.001387	2055.3	2540.9
499	0.001740	0.001401	2044.0	2539.8
599	0.001776	0.001411	1976.5	2487.9
646	0.001800	0.001429	1936.5	2439.2
699	0.001804	0.001433	1937.0	2438.4
745	0.001813	0.001451	1936.9	2420.1
799	0.001842	0.001442	1905.4	2432.8
845	0.001837	0.001465	1841.4	2309.8
899	0.001874	0.001484	1944.0	2455.4
946	0.001861	0.001478	1828.6	2302.2
999	0.001870	0.001481	1849.2	2334.8
1045	0.001877	0.001483	1771.5	2243.3
1158	0.001895	0.001497	1752.2	2217.8
1215	0.001891	0.001502	1736.7	2186.4
1244	0.001892	0.001496	1726.5	2183.9
1303	0.001912	0.001520	1776.8	2234.9
1360	0.001895	0.001514	1691.6	2117.9
1418	0.001885	0.001520	1639.3	2033.0
1447	0.001886	0.001514	1629.2	2030.1
1505	0.001885	0.001515	1620.6	2015.8
1563	0.001871	0.001548	1705.0	2061.1
1621	0.001871	0.001527	1641.5	2011.4
1650	0.001873	0.001541	1637.4	1990.4
1708	0.001880	0.001581	1774.9	2111.1
1766	0.001880	0.001575	1775.2	2119.5
1795	0.001865	0.001567	1697.0	2019.6
2900	0.001418	0.001417	1488.6	1490.1
2999	0.001322	0.001381	1504.2	1439.3
3181	0.001077	0.001238	1360.7	1183.9

Bulk density (KN/m³) : 23.94 Deflection (mm) : 0.7376

Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m³)	Max load (N)	Lag (sec)	Temp (C)
2264042	2550392	2920653	4.565	1055.0	0.013	23.5
1993482	2389462	2689740	4.419	971.6	0.013	23.5
1904261	2398426	2630511	4.538	950.2	0.013	23.5
1871441	2391531	2624237	4.676	947.9	0.013	23.5
1816281	2357538	2593003	4.686	936.7	0.013	23.5
1824693	2442278	2658574	4.721	960.4	0.013	23.5
1719268	2297966	2480683	4.737	896.1	0.014	23.5
1714097	2269692	2477580	4.749	894.9	0.014	23.5
1686034	2284865	2468203	4.757	891.6	0.014	23.5
1634529	2260595	2399598	4.781	866.8	0.014	23.5
1659627	2276591	2443243	4.797	882.6	0.014	23.5
1456707	2065949	2209227	4.840	798.0	0.014	23.5
1375277	2039679	2177993	4.856	786.8	0.014	23.5
1198420	1831726	1937771	4.880	699.9	0.015	23.5
1174563	1813454	1931496	4.901	697.7	0.015	23.5
1112853	1763189	1878474	4.920	678.5	0.015	23.5
1075896	1707133	1841034	4.931	665.0	0.015	23.5
1073552	1701203	1841034	4.923	665.0	0.015	23.5
1068173	1667625	1834760	4.938	662.8	0.015	23.5
1034595	1686793	1822280	4.939	658.2	0.015	23.5
1002395	1577024	1747400	4.932	631.2	0.015	23.5
1037146	1654583	1850411	4.922	668.4	0.015	23.5
982606	1557649	1738023	4.915	627.8	0.015	23.5
988950	1576473	1759880	4.898	635.7	0.015	23.5
943650	1513177	1688103	4.895	609.8	0.015	23.5
924551	1481115	1669417	4.851	603.0	0.015	23.5
918552	1455741	1650863	4.832	596.3	0.015	23.4
912415	1459947	1644458	4.808	594.0	0.015	23.4
929446	1470566	1688103	4.773	609.8	0.015	23.4
892558	1398996	1603846	4.750	579.3	0.015	23.4
869735	1337699	1547721	4.698	559.1	0.015	23.4
863737	1341078	1541446	4.673	556.8	0.015	23.4
859807	1330321	1532138	4.617	553.4	0.015	23.5
911105	1331425	1591368	4.561	574.9	0.015	23.4
877113	1317014	1541446	4.511	556.8	0.015	23.4
874217	1291985	1532138	4.490	553.4	0.015	23.4
943926	1335424	1644458	4.438	594.0	0.014	23.4
944063	1345766	1647560	4.390	595.1	0.014	23.4
909726	1288469	1572681	4.363	568.1	0.014	23.4
1049419	1051625	1269990	2.579	458.8	0.014	23.3
1138158	1042041	1254407	2.225	453.1	0.013	23.3
1263095	956130	1079619	1.561	390.0	0.013	23.3

Filename : CD4390

Material : Conventional Asphalt Concrete, California

Beam width (cm) : 5.017 Beam depth (cm) : 4.917 Bulk density (KN/m^3) : 23.93 Deflection (mm) : 0.7170

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.001584	0.001232	3360.0	4318.8	2121454	3505004	3313668	5.101	1203.8	0.012	23.3
14	0.001576	0.001231	3122.5	3999.6	1980865	3249820	3074756	4.722	1117.0	0.012	23.3
21	0.001605	0.001225	3057.6	4006.1	1905433	3270919	3040626	4.766	1104.6	0.012	23.3
30	0.001617	0.001207	2905.0	3891.3	1796975	3224309	2916516	4.766	1059.5	0.012	23.3
40	0.001623	0.001214	2840.1	3794.8	1750365	3125090	2848256	4.749	1034.7	0.012	23.3
50	0.001603	0.001196	2691.4	3606.4	1678726	3014287	2702426	4.709	981.8	0.013	23.3
60	0.001603	0.001192	2647.0	3560.2	1651077	2986776	2662091	4.721	967.1	0.013	23.3
70	0.001620	0.001216	2747.7	3660.3	1696584	3010564	2752070	4.692	999.8	0.013	23.3
80	0.001624	0.001228	2737.4	3621.0	1685483	2949405	2733454	4.700	993.0	0.013	23.3
90	0.001618	0.001219	2708.3	3595.6	1673761	2950164	2708632	4.665	984.0	0.013	23.3
100	0.001624	0.001222	2651.0	3523.9	1632322	2884316	2652782	4.659	963.7	0.013	23.3
200	0.001636	0.001235	2568.2	3401.5	1569785	2753863	2565905	4.564	932.1	0.013	23.3
300	0.001632	0.001250	2462.7	3214.1	1509453	2571146	2444967	4.432	888.2	0.013	23.3
400	0.001624	0.001255	2408.7	3118.1	1483115	2485510	2382912	4.326	865.7	0.013	23.3
500	0.001567	0.001256	2301.3	2871.8	1468221	2286451	2240186	4.145	813.8	0.013	23.3
565	0.001553	0.001275	2336.7	2844.5	1505110	2230257	2249494	4.012	817.2	0.013	23.3
600	0.001511	0.001244	2219.8	2695.7	1469325	2166823	2134692	3.938	775.5	0.013	23.3
700	0.001481	0.001219	2070.8	2516.4	1398237	2064708	1991966	3.817	723.6	0.014	23.3
800	0.001441	0.001255	2125.1	2440.6	1474978	1945424	1991966	3.638	723.6	0.014	23.3
900	0.001423	0.001259	2121.1	2397.3	1490699	1904054	1973349	3.440	716.9	0.014	23.3
1000	0.001350	0.001220	1920.3	2124.3	1422576	1740850	1768568	3.209	642.5	0.014	23.3
1068	0.001322	0.001207	1895.8	2076.0	1434436	1720165	1737540	0.000	631.2	0.014	23.3
1305	0.000974	0.000992	1453.5	1427.3	1491664	1438435	1262819	0.000	458.8	0.013	23.3
1423	0.000560	0.000578	931.2	902.4	1662178	1560959	803612	0.000	291.9	0.012	23.3

Filename : CE2450
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.917 Beam depth (cm) : 4.923 Bulk density (KN/m^3) : 23.93 Deflection (mm) : 0.1989

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000362	0.000358	1155.3	1168.6	3194247	3267816	3668898	0.321	363.5	0.011	23.2
11	0.000355	0.000356	1098.8	1095.3	3095303	3075860	3464117	0.300	343.2	0.011	23.2
23	0.000365	0.000354	1084.5	1116.5	2974089	3151773	3474391	0.298	344.2	0.011	23.2
30	0.000345	0.000358	1116.1	1076.6	3235686	3010564	3460738	0.299	342.9	0.011	23.2
40	0.000357	0.000368	1178.8	1145.4	3300085	3115506	3668898	0.298	363.5	0.01	23.2
50	0.000365	0.000359	1111.2	1128.4	3043936	3139362	3535825	0.303	350.3	0.011	23.2
60	0.000360	0.000361	1123.1	1118.5	3121367	3095648	3539204	0.294	350.7	0.011	23.2
70	0.000351	0.000358	1142.9	1122.7	3253819	3139569	3576781	0.320	354.4	0.011	23.2
80	0.000357	0.000361	1128.8	1117.2	3160047	3095166	3546030	0.309	351.3	0.011	23.2
90	0.000351	0.000361	1110.5	1081.8	3161495	3000290	3460738	0.304	342.9	0.011	23.2
100	0.000354	0.000367	1167.3	1127.0	3295121	3071585	3621116	0.298	358.8	0.01	23.1
200	0.000391	0.000406	1152.6	1109.3	2949888	2732144	3569955	0.318	353.7	0.011	23.0
300	0.000346	0.000356	1173.7	1141.8	3388272	3206451	3655246	0.295	362.2	0.01	22.9
15002	0.000378	0.000389	1055.1	1024.8	2790751	2632856	3283261	0.299	325.3	0.011	23.7
20000	0.000384	0.000406	1143.9	1082.1	2975882	2662711	3511899	0.308	347.9	0.011	22.9
30000	0.000389	0.000408	1151.0	1098.4	2956852	2692980	3549477	0.319	351.7	0.011	22.9
40000	0.000384	0.000410	1076.2	1007.8	2802266	2457240	3286640	0.309	325.6	0.011	23.4
50000	0.000394	0.000419	919.5	865.5	2333199	2067259	2815642	0.292	279.0	0.012	24.2
60000	0.000386	0.000428	842.6	761.1	2181440	1779944	2525570	0.273	250.2	0.013	25.2
363130	0.000405	0.000427	703.2	668.2	1735127	1566682	2163789	0.256	214.4	0.013	25.8
372890	0.000405	0.000429	703.0	662.2	1737954	1541860	2153584	0.251	213.4	0.013	26.1
399760	0.000401	0.000445	703.4	633.9	1753399	1424231	2105802	0.242	208.6	0.013	26.4
400000	0.000404	0.000436	693.3	642.4	1717062	1473944	2105802	0.243	208.6	0.013	26.4
454970	0.000418	0.000431	721.1	699.4	1725612	1622738	2242323	0.257	222.2	0.013	25.9
500000	0.000407	0.000437	692.4	645.2	1702307	1477805	2109181	0.251	209.0	0.013	26.1

Filename : CD2370
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.938 Beam depth (cm) : 4.943 Bulk density (KN/m^3) : 23.93 Deflection (mm) : 0.5613

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.001332	0.001059	3079.9	3872.6	2312238	3655660	3822864	2.794	1086.8	0.01	22.4
12	0.001301	0.001036	2933.7	3685.0	2255423	3558647	3639664	2.622	1034.7	0.01	22.4
24	0.001252	0.001004	2909.5	3630.9	2323270	3618289	3599190	2.538	1023.2	0.01	22.4
33	0.001303	0.001021	2786.1	3554.2	2138277	3479907	3480251	2.661	989.4	0.011	22.4
40	0.001324	0.001027	2821.2	3635.5	2131107	3538790	3539755	2.650	1006.3	0.01	22.4
50	0.001327	0.001045	2805.5	3561.4	2114490	3407371	3496937	2.650	994.1	0.011	22.4
60	0.001320	0.001021	2735.2	3537.9	2072016	3466392	3437433	2.641	977.2	0.011	22.4
70	0.001329	0.000998	2638.8	3515.7	1985484	3524448	3358968	2.572	954.9	0.011	22.4
80	0.001329	0.001029	2721.6	3515.8	2047815	3417300	3418403	2.641	971.8	0.011	22.4
90	0.001284	0.001012	2721.5	3454.9	2118971	3415025	3392271	2.587	964.4	0.011	22.4
100	0.001272	0.001012	2738.1	3439.3	2153171	3397098	3397029	2.542	965.7	0.011	22.4
200	0.001330	0.000990	2616.7	3514.5	1967695	3549684	3342282	2.520	950.2	0.011	22.4
300	0.001308	0.001007	2591.6	3368.4	1981002	3346764	3263817	2.542	927.9	0.011	22.4
400	0.001322	0.000995	2496.6	3315.1	1889092	3330768	3173424	2.563	902.2	0.011	22.4
500	0.001318	0.001002	2505.0	3294.7	1900814	3288157	3171011	2.755	901.5	0.011	22.4
600	0.001307	0.001004	2458.6	3203.3	1880542	3192247	3099647	2.731	881.2	0.011	22.4
700	0.001298	0.001002	2434.8	3153.4	1876130	3147154	3061587	2.696	870.4	0.011	22.4
800	0.001275	0.000983	2285.8	2964.6	1792217	3014770	2876042	2.699	817.6	0.012	22.4
900	0.001296	0.000995	2296.6	2991.6	1772705	3008013	2895073	2.733	823.0	0.012	22.4
1000	0.001316	0.001008	2290.8	2990.1	1741194	2966436	2890315	2.749	821.7	0.012	22.4
2000	0.001149	0.000973	2070.3	2444.4	1802215	2512400	2497783	2.210	710.1	0.012	22.3
3000	0.000977	0.000945	1958.0	2022.9	2004790	2139725	2217087	1.704	630.3	0.012	22.2
4000	0.000533	0.000886	2032.6	1222.3	3815969	1379896	1700859	0.691	483.5	0.011	22.1
5000	0.000206	0.000621	1919.2	635.1	9333762	1022184	1063347	0.109	302.3	0.009	22.0
5113	0.000178	0.000532	1694.2	567.1	9515100	1066174	946821	0.080	269.2	0.01	22.0

Filename : CF2358
Material : Conventional Asphalt Concrete, California

Beam width (cm) : 4.907 Beam depth (cm) : 4.912 Bulk density (KN/m^3) : 23.96 Deflection (mm) : 0..4648

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000906	0.000927	3135.2	3064.6	3460876	3306842	4196366	2.073	963.7	0.011	21.9
11	0.000950	0.000940	3036.1	3067.4	3196384	3262576	4131553	1.948	948.8	0.010	21.9
21	0.000959	0.000922	2989.3	3107.6	3117781	3369518	4125692	1.987	947.5	0.010	21.9
31	0.000967	0.000913	2942.6	3118.0	3043108	3416541	4099215	1.986	941.4	0.010	21.9
41	0.000961	0.000939	2890.5	2956.9	3007737	3147636	3957868	2.034	909.0	0.011	21.9
51	0.000964	0.000932	2806.3	2902.8	2911138	3114678	3863613	2.106	887.3	0.011	21.9
61	0.000975	0.000935	2807.6	2928.4	2879145	3132192	3881264	2.078	891.3	0.011	21.9
71	0.000971	0.000922	2851.5	3003.5	2935270	3256577	3960764	2.057	909.6	0.011	21.9
81	0.000979	0.000929	2776.8	2926.0	2836603	3149567	3857684	2.076	886.0	0.011	21.9
91	0.000985	0.000936	2838.7	2985.5	2882386	3188179	3940148	2.067	904.9	0.011	21.9
101	0.000980	0.000936	2806.7	2938.6	2865010	3140535	3887194	2.065	892.7	0.011	21.8
200	0.001009	0.000947	2738.8	2917.7	2715251	3081444	3825346	2.158	878.5	0.011	21.8
300	0.001025	0.000960	2684.6	2868.0	2618859	2988914	3754672	2.164	862.3	0.011	21.8
400	0.001029	0.000960	2594.7	2779.9	2521984	2894866	3633941	2.190	834.6	0.011	21.8
500	0.001044	0.000968	2559.1	2760.1	2451931	2852117	3595605	2.200	825.7	0.011	21.8
600	0.001068	0.000978	2546.7	2779.4	2385532	2841498	3598569	2.239	826.4	0.011	21.8
700	0.001056	0.000976	2492.7	2696.4	2361331	2762895	3507280	2.208	805.5	0.011	21.8
800	0.001077	0.000967	2384.4	2654.5	2215019	2745106	3401235	2.207	781.1	0.012	21.9
900	0.001094	0.000979	2312.4	2583.5	2114490	2639130	3304084	2.240	758.8	0.012	21.9
1000	0.001080	0.000999	2471.0	2670.0	2289071	2672571	3474873	2.163	798.0	0.011	21.9
2000	0.001156	0.001012	2072.5	2366.8	1792493	2337750	2991947	2.313	687.1	0.012	21.9
3000	0.001208	0.001047	1965.9	2266.5	1627910	2163858	2850600	2.289	654.6	0.012	22.0
4000	0.001234	0.001064	1845.1	2139.7	1495594	2011340	2682707	2.212	616.1	0.012	22.1
5000	0.001251	0.001040	1631.3	1962.0	1304189	1886541	2411802	2.077	553.9	0.012	22.2
6000	0.001239	0.001005	1473.4	1816.3	1189250	1807317	2202746	1.895	505.9	0.012	22.3
7000	0.001214	0.000953	1326.0	1688.9	1092651	1772498	2011340	1.663	461.9	0.012	22.4
8000	0.001067	0.000826	1073.0	1385.5	1005774	1676933	1637287	1.235	376.0	0.012	22.4
9000	0.000582	0.000459	694.5	880.5	1193593	1918741	1051281	0.404	241.4	0.011	22.5
9243	0.000364	0.000327	596.5	664.4	1637287	2031543	851050	0.181	195.4	0.010	22.6

Filename : CE4365
Material : Conventional Asphalt Concrete, California

Beam width (cm) : 5.011 Beam depth (cm) : 4.953 Bulk density (KN/m^3) : 23.94 Deflection (mm) : 0.5278

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000906	0.000732	2807.4	3472.9	3099096	4742381	3671656	2.072	1002.3	0.011	22.8
12	0.000914	0.000736	2687.2	3337.2	2939752	4534014	3520518	2.055	961.0	0.011	22.8
24	0.000904	0.000736	2606.9	3203.2	2882455	4351986	3399097	2.047	927.9	0.012	22.8
30	0.000898	0.000741	2547.3	3090.5	2835224	4173612	3302498	2.055	901.5	0.012	22.8
40	0.000907	0.000749	2550.5	3091.0	2810816	4128519	3304980	2.045	902.2	0.012	22.8
50	0.000897	0.000734	2508.3	3066.0	2796474	4178163	3262852	2.042	890.7	0.012	22.8
60	0.000911	0.000736	2475.2	3063.9	2716699	4162718	3238030	2.044	883.9	0.012	22.8
70	0.000912	0.000746	2458.3	3006.0	2696014	4031024	3198453	2.040	873.1	0.012	22.8
80	0.000919	0.000735	2417.9	3020.6	2632373	4108041	3176113	2.045	867.0	0.012	22.8
90	0.000920	0.000737	2403.3	3001.1	2612171	4073221	3156324	2.044	861.6	0.012	22.8
100	0.000915	0.000733	2394.6	2988.3	2617480	4076462	3143913	2.047	858.2	0.012	22.8
200	0.000933	0.000753	2349.7	2909.9	2519295	3863544	3074549	2.050	839.3	0.012	22.9
300	0.000939	0.000757	2356.9	2925.2	2508884	3864785	3086960	2.007	842.7	0.012	22.9
400	0.000941	0.000773	2333.1	2841.5	2479580	3678138	3029939	1.998	827.1	0.012	22.8
500	0.000945	0.000761	2214.4	2750.1	2344162	3615600	2901140	1.985	791.9	0.012	22.8
600	0.000939	0.000767	2194.4	2686.5	2335888	3501143	2856530	1.945	779.8	0.012	22.9
700	0.000938	0.000753	2185.3	2721.3	2329889	3613187	2866458	1.928	782.5	0.012	22.9
800	0.000932	0.000760	2112.8	2591.2	2266938	3410060	2752484	1.899	751.3	0.012	22.9
900	0.000929	0.000739	2038.9	2563.0	2194747	3468116	2685603	1.869	733.1	0.012	22.9
1000	0.000919	0.000755	2038.0	2480.5	2218604	3286915	2645956	1.878	722.3	0.012	22.9
2000	0.000946	0.000767	1875.4	2314.7	1982244	3019458	2450207	1.742	668.8	0.012	22.9
3000	0.000419	0.000383	957.9	1049.2	2283762	2740004	1184216	0.363	323.3	0.011	22.9
3136	0.000250	0.000202	600.7	742.6	2406976	3678069	785341	0.126	214.4	0.01	22.9

Filename : CB3350
Material : Conventional Asphalt Concrete, California

Beam width (cm) : 4.935 Beam depth (cm) : 4.973 Bulk density (KN/m^3) : 23.96 Deflection (mm) : 0.4023

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000785	0.000588	2745.1	3667.1	3496041	6238803	4850908	1.550	1006.3	0.008	22.4
13	0.000781	0.000580	2508.8	3375.1	3213346	5815726	4446654	1.514	922.4	0.009	22.4
20	0.000781	0.000565	2529.4	3495.9	3236720	6182609	4534704	1.504	940.7	0.009	22.4
30	0.000788	0.000565	2499.1	3488.2	3170666	6177093	4498850	1.493	933.3	0.009	22.4
40	0.000796	0.000571	2486.5	3470.2	3122332	6081045	4476027	1.507	928.5	0.009	22.4
50	0.000799	0.000569	2461.9	3457.6	3079859	6074978	4443414	1.504	921.8	0.009	22.4
60	0.000796	0.000567	2455.4	3446.1	3086133	6078425	4430382	1.508	919.1	0.009	22.4
70	0.000805	0.000577	2445.0	3411.7	3038971	5916806	4401010	1.511	913.0	0.009	22.4
80	0.000798	0.000573	2450.6	3413.0	3071447	5957556	4407560	1.508	914.3	0.009	22.4
90	0.000803	0.000571	2499.1	3512.5	3111851	6147099	4511881	1.520	936.0	0.009	22.4
100	0.000801	0.000574	2433.2	3392.5	3038213	5906464	4378187	1.523	908.2	0.009	22.3
200	0.000816	0.000581	2415.4	3390.8	2960989	5835376	4358674	1.548	904.2	0.009	22.4
300	0.001061	0.000572	2111.2	3914.6	1990173	6842115	4238012	1.560	879.2	0.009	22.4
400	0.000838	0.000586	2323.9	3321.9	2772755	5665897	4224980	1.586	876.5	0.009	22.4
500	0.000846	0.000601	2326.0	3274.4	2748485	5446361	4202158	1.603	871.8	0.009	22.3
600	0.000861	0.000595	2282.1	3301.7	2649886	5546890	4169544	1.635	865.0	0.009	22.4
700	0.000870	0.000606	2258.3	3244.3	2595278	5356588	4114178	1.648	853.5	0.009	22.4
800	0.000875	0.000602	2142.0	3115.0	2447036	5174766	3921807	1.678	813.6	0.010	22.3
900	0.000889	0.000607	2147.0	3142.7	2415663	5176077	3941389	1.683	817.6	0.010	22.3
1000	0.000912	0.000615	2143.4	3176.2	2350574	5161597	3954420	1.717	820.4	0.010	22.3
2000	0.000984	0.000655	2013.6	3026.1	2046091	4621236	3735987	1.850	775.0	0.010	22.3
3000	0.001038	0.000676	1869.2	2870.7	1801181	4248561	3497971	1.865	725.7	0.010	22.4
4000	0.001071	0.000695	1720.4	2651.7	1605983	3815004	3224171	1.870	668.8	0.011	22.4
5000	0.001110	0.000722	1715.1	2637.2	1545101	3653178	3211139	1.866	666.2	0.011	22.5
6000	0.001133	0.000734	1625.3	2509.7	1434367	3420196	3048142	1.840	632.3	0.011	22.6
7000	0.001129	0.000743	1539.0	2340.2	1362728	3150739	2868803	1.764	595.1	0.011	22.7
8000	0.001113	0.000735	1464.7	2217.1	1315980	3015252	2725387	1.647	565.4	0.011	22.8
9000	0.001059	0.000713	1370.1	2034.4	1294260	2853496	2529776	1.461	524.8	0.011	22.9
10000	0.000991	0.000668	1252.0	1858.4	1263578	2784063	2311342	1.261	479.5	0.011	23.0
11436	0.000834	0.000577	1073.2	1549.6	1287434	2683948	1959283	0.894	406.4	0.011	23.2

Filename : CA3350
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.884 Beam depth (cm) : 4.917

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)
1	0.000539	0.000584	8343.0	7704.5	15467554
11	0.000504	0.000533	7372.1	6960.5	14638775
20	0.000504	0.000524	7159.8	6875.3	14217490
30	0.000492	0.000516	7117.7	6788.7	14476742
40	0.000495	0.000524	7173.6	6766.1	14502254
50	0.000498	0.000516	7118.4	6871.8	14304367
60	0.000492	0.000519	7228.7	6854.7	14701519
70	0.000510	0.000524	7176.3	6972.2	14083038
80	0.000516	0.000530	7241.8	7038.4	14047184
90	0.000513	0.000533	7335.6	7048.8	14311952
100	0.000516	0.000533	7350.8	7104.6	14258860
200	0.000539	0.000560	7654.1	7369.4	14191289
300	0.000551	0.000551	7603.8	7603.8	13792758
400	0.000542	0.000575	7713.4	7274.2	14222317
500	0.000411	0.000471	6260.2	5467.7	15222781
600	0.000238	0.000310	3903.9	3003.0	16376315
700	0.000212	0.000286	3436.7	2541.7	16243241
800	0.000191	0.000265	3188.9	2293.1	16720375
900	0.000179	0.000253	3021.6	2132.9	16899645
1000	0.000173	0.000229	2766.4	2083.7	16006053
1059	0.000164	0.000238	2836.9	1950.5	17309898

Bulk density (KN/m^3) : 23.96 Deflection (mm) : 0.3429

Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
13190825	14686350	0.378	2484.3	0.001	-1.7
13048788	13127391	0.242	2220.5	0.001	-1.7
13109464	12860554	0.236	2175.4	0.001	-1.7
13168761	12740581	0.235	2155.1	0.001	-1.7
12901235	12767472	0.219	2159.6	0.001	-1.7
13329414	12820563	0.245	2168.7	0.001	-1.7
13219784	12900545	0.227	2182.1	0.001	-1.7
13294250	12967427	0.251	2193.4	0.001	-1.7
13268738	13087400	0.270	2213.7	0.001	-1.7
13214268	13180482	0.263	2229.5	0.001	-1.7
13319072	13247364	0.257	2240.8	0.001	-1.6
13154281	13766557	0.329	2328.7	0.001	-1.7
13792758	13940311	0.333	2358.0	0.001	-1.9
12647499	13727256	0.339	2321.9	0.001	-2.0
11613249	10701730	0.192	1810.2	0.001	-2.0
9690233	6223772	0.074	1052.8	0.001	-1.9
8884897	5357484	0.055	906.2	0.001	-1.8
8646330	4891037	0.041	827.3	0.001	-1.6
8420864	4584554	0.037	775.5	0.001	-1.6
9081405	4357985	0.052	737.1	0.001	-1.9
8181607	4238012	0.035	716.9	0.001	-2.0

Filename : CB2470
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.892 Beam depth (cm) : 4.968 Bulk density (KN/m^3) : 23.90 Deflection (mm) : 0.2413

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000475	0.000507	6896.4	6470.3	14509149	12772298	17216815	0.156	2116.8	0.001	-1.8
13	0.000484	0.000523	7150.8	6620.9	14767022	12659910	17729803	0.124	2179.9	0.001	-1.8
20	0.000492	0.000520	7146.7	6757.6	14535350	12995696	17913210	0.131	2202.4	0.001	-1.8
30	0.000498	0.000530	7226.6	6780.3	14522249	12782641	18041457	0.152	2218.2	0.001	-1.8
40	0.000493	0.000535	7359.0	6785.2	14922159	12684732	18206248	0.139	2238.5	0.001	-1.8
50	0.000493	0.000532	7359.7	6823.9	14923538	12828837	18261408	0.150	2245.3	0.001	-1.8
60	0.000499	0.000533	7325.2	6854.3	14675318	12850212	18261408	0.155	2245.3	0.001	-1.8
70	0.000498	0.000539	7401.1	6828.4	14871826	12659910	18316568	0.135	2252.1	0.001	-1.8
80	0.000502	0.000535	7320.4	6871.7	14578788	12846764	18280024	0.154	2247.6	0.001	-1.8
90	0.000502	0.000536	7345.2	6876.2	14629122	12819874	18316568	0.162	2252.1	0.001	-1.8
100	0.000499	0.000548	7460.4	6791.4	14946981	12386178	18335184	0.147	2254.3	0.001	-1.9
200	0.000501	0.000538	7485.2	6966.7	14951808	12952947	18609605	0.139	2288.1	0.001	-1.9
300	0.000510	0.000553	7604.5	7010.1	14923538	12681284	18811629	0.129	2312.9	0.001	-1.8
400	0.000508	0.000545	7599.7	7080.5	14957324	12983975	18903332	0.150	2324.2	0.001	-1.7
500	0.000504	0.000541	7601.7	7078.4	15094534	13087400	18903332	0.157	2324.2	0.001	-1.6
600	0.000508	0.000536	7607.9	7206.7	14973872	13434908	19086739	0.163	2346.8	0.001	-1.8
700	0.000508	0.000536	7593.5	7192.9	14945602	13409396	19050196	0.171	2342.2	0.001	-2.0
800	0.000517	0.000538	7558.3	7265.3	14619469	13507305	19104666	0.177	2349.0	0.001	-2.0
900	0.000513	0.000541	7635.5	7235.6	14897337	13378369	19159826	0.194	2355.7	0.001	-2.0
1000	0.000520	0.000536	7554.9	7323.9	14527765	13653479	19178443	0.203	2358.0	0.001	-1.9
2000	0.000516	0.000559	7771.4	7170.1	15074539	12832974	19233603	0.228	2364.8	0.001	-2.1
3000	0.000423	0.000565	8249.9	6181.8	19495613	10947192	18224864	0.156	2240.8	0.001	-2.0
3156	0.000374	0.000578	8426.4	5451.0	22531481	9428913	17069952	0.084	2098.8	0.001	-1.9
3198	0.000356	0.000569	8387.8	5247.7	23554010	9219994	16647978	0.066	2046.9	0.001	-2.0
3233	0.000328	0.000569	8473.3	4879.9	25849355	8573933	15969510	0.038	1963.5	0.001	-2.1
3268	0.000295	0.000556	8447.8	4484.4	28636314	8069219	15107635	0.037	1857.6	0.001	-2.2
3303	0.000279	0.000556	8208.5	4115.1	29460267	7404541	14136129	0.037	1738.1	0.001	-2.2
3338	0.000261	0.000530	7745.2	3807.4	29704350	7177695	13164624	0.022	1618.6	0.001	-2.2
3373	0.000249	0.000519	7356.3	3530.2	29565071	6808537	12302749	0.022	1512.6	0.001	-2.3
3408	0.000226	0.000496	7157.7	3267.3	31605301	6585139	11569121	0.018	1422.5	0.001	-2.3
3443	0.000221	0.000477	6733.9	3114.4	30537266	6532116	10982356	0.014	1350.3	0.001	-2.3
3478	0.000201	0.000463	6718.2	2916.2	33400070	6293480	10487295	0.022	1289.5	0.001	-2.2
3513	0.000206	0.000446	6191.8	2857.8	30113913	6414763	10083938	0.010	1239.9	0.001	-2.2
3755	0.000159	0.000381	5403.3	2258.4	33891683	5920874	8214014	0.015	1009.9	0.001	-1.9
4000	0.000149	0.000346	4768.4	2055.3	32003832	5945972	7407299	0.016	910.7	0.001	-2.3

Filename : CB4460
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.983 Beam depth (cm) : 4.966 Bulk density (KN/m^3) : 23.94 Deflection (mm) : 0.1956

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000347	0.000323	4898.3	5259.5	14109928	16267374	16146022	0.037	1636.6	0.001	-1.7
11	0.000353	0.000338	4979.2	5198.5	14100275	15370334	16190839	0.045	1641.1	0.000	-1.7
21	0.000362	0.000338	4959.6	5309.2	13698297	15697157	16323913	0.041	1654.6	0.000	-1.7
33	0.000352	0.000326	4970.6	5356.4	14136129	16415616	16412858	0.047	1663.7	0.000	-1.7
40	0.000355	0.000338	5078.2	5324.3	14320226	15741975	16546621	0.040	1677.2	0.000	-1.7
50	0.000356	0.000331	5060.6	5448.1	14211285	16470776	16702448	0.036	1693.0	0.000	-1.7
60	0.000365	0.000350	5181.2	5401.6	14193358	15426873	16835522	0.052	1706.5	0.000	-1.7
70	0.000368	0.000343	5134.1	5513.5	13950654	16088793	16924467	0.044	1715.5	0.000	-1.7
80	0.000358	0.000343	5254.2	5482.6	14693245	15998469	17080294	0.042	1731.3	0.000	-1.7
90	0.000368	0.000341	5197.4	5605.9	14122339	16430096	17169240	0.054	1740.3	0.000	-1.7
100	0.000370	0.000334	5152.8	5704.9	13945138	17093395	17236121	0.036	1747.1	0.000	-1.5
200	0.000372	0.000353	5464.6	5764.4	14670492	16323913	17858740	0.044	1810.2	0.000	-1.4
300	0.000367	0.000356	5627.1	5791.9	15352407	16264616	18170394	0.053	1841.8	0.000	-1.6
400	0.000390	0.000352	5511.4	6118.6	14118202	17400912	18459294	0.064	1871.1	0.000	-1.7
500	0.000386	0.000367	5735.3	6038.4	14862173	16474913	18726131	0.043	1898.1	0.000	-1.8
600	0.000393	0.000355	5666.4	6285.4	14405724	17724977	18970903	0.057	1922.9	0.000	-1.8
700	0.000386	0.000368	5876.4	6161.9	15227608	16743129	19148794	0.063	1941.0	0.000	-1.7
800	0.000384	0.000372	5970.7	6161.6	15531677	16541795	19304621	0.050	1956.8	0.000	-1.5
900	0.000392	0.000367	5922.7	6332.0	15114530	17275423	19482512	0.054	1974.8	0.000	-1.4
1000	0.000389	0.000359	5892.7	6381.8	15153142	17772552	19504576	0.059	1977.0	0.000	-1.6
2000	0.000407	0.000402	6357.9	6428.6	15630965	15979852	20349903	0.081	2062.7	0.000	-1.8
3000	0.000413	0.000386	6293.5	6730.8	15248982	17442282	20705685	0.099	2098.8	0.000	-1.5
4000	0.000408	0.000387	6393.1	6737.4	15659924	17391948	20883576	0.114	2116.8	0.001	-1.8
5000	0.000432	0.000384	6238.4	7012.2	14437441	18241412	21016650	0.131	2130.3	0.001	-1.5
6000	0.000419	0.000392	6404.7	6843.0	15297247	17462967	21061467	0.129	2134.8	0.001	-1.7
7234	0.000431	0.000390	6320.9	6972.2	14679455	17860808	21105595	0.125	2139.3	0.001	-1.6
8000	0.000440	0.000414	6412.4	6804.5	14589131	16428027	21016650	0.133	2130.3	0.001	-1.7
9000	0.000454	0.000417	6352.2	6919.1	13978234	16585233	21083531	0.119	2137.1	0.001	-1.6
10000	0.000457	0.000428	6367.3	6811.0	13920316	15927450	20949768	0.134	2123.5	0.001	-1.7
15145	0.000694	0.000477	5185.3	7551.4	7467975	15837815	19571458	0.194	1983.8	0.001	-1.7
17488	0.001699	0.000587	3323.5	9616.5	1956663	16380452	15723358	1.248	1593.8	0.003	-1.6
17582	0.001952	0.000617	3080.3	9746.8	1578128	15801272	14900785	1.446	1510.4	0.003	-1.5
17668	0.002204	0.000644	2798.6	9581.3	1269990	14885616	13788621	1.717	1397.7	0.003	-1.5
17760	0.002490	0.000673	2529.9	9353.1	1016116	13887909	12677147	1.955	1284.9	0.004	-1.6
17843	0.002743	0.000702	2325.2	9088.3	847671	12950879	11787003	1.991	1194.8	0.004	-1.7
17968	0.002987	0.000717	2092.1	8720.8	700325	12168296	10741721	2.041	1088.8	0.004	-1.7
18069	0.003159	0.000730	1982.7	8578.1	627700	11749770	10252865	2.077	1039.3	0.004	-1.7
18244	0.003367	0.000754	1851.4	8269.2	549800	10967877	9630247	1.933	976.1	0.004	-1.6
18723	0.003750	0.000775	1563.9	7569.3	416996	9770215	8251247	1.780	836.3	0.004	-1.7
19309	0.003999	0.000787	1400.5	7119.1	350218	9049688	7450737	1.710	755.2	0.004	-1.6
19914	0.004182	0.000794	1305.2	6873.9	312088	8655983	6983256	1.504	707.9	0.004	-1.5
20000	0.004211	0.000791	1294.7	6890.8	307496	8709764	6939128	1.593	703.3	0.004	-1.6
20344	0.004288	0.000791	1257.9	6818.1	293362	8618061	6760961	1.550	685.3	0.004	-1.7

Filename : CD3325
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.973 Beam depth (cm) : 4.943 Bulk density (KN/m^3) : 24.01 Deflection (mm) : 0.1473

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000334	0.000304	4455.4	4892.2	13349410	16095688	19798993	0.119	1487.9	0.002	-2.3
13	0.000304	0.000277	4370.1	4793.0	14377454	17294729	19408736	0.087	1458.5	0.002	-2.3
20	0.000307	0.000316	4588.1	4458.3	14948360	14114065	19199128	0.105	1442.7	0.002	-2.3
30	0.000298	0.000301	4381.6	4338.2	14703588	14413998	18508938	0.096	1390.9	0.002	-2.3
40	0.000304	0.000310	4552.4	4464.9	14977319	14407103	19139141	0.076	1438.2	0.002	-2.3
50	0.000301	0.000295	4589.4	4682.2	15248982	15870911	19679020	0.106	1478.8	0.002	-2.3
60	0.000310	0.000298	4366.1	4540.7	14087864	15237950	18899195	0.077	1420.2	0.002	-2.3
70	0.000316	0.000313	4472.9	4515.5	14160262	14431235	19079155	0.107	1433.7	0.002	-2.3
80	0.000316	0.000292	4324.5	4677.5	13690712	16017085	19079155	0.099	1433.7	0.002	-2.3
90	0.000298	0.000304	4517.6	4429.0	15160037	14571204	18988830	0.107	1427.0	0.002	-2.3
100	0.000316	0.000313	4430.7	4472.9	14026499	14295404	18899195	0.096	1420.2	0.002	-2.3
200	0.000313	0.000301	4429.2	4604.6	14156125	15299316	19168790	0.078	1440.5	0.002	-2.2
300	0.000304	0.000307	4544.5	4500.4	14951118	14662218	19199128	0.113	1442.7	0.002	-2.1
400	0.000298	0.000301	4544.9	4500.0	15251740	14951118	19199128	0.132	1442.7	0.002	-2.0
500	0.000301	0.000295	4519.5	4610.8	15016621	15629586	19379087	0.061	1456.3	0.002	-1.9
600	0.000316	0.000304	4492.4	4668.6	14222317	15359992	19439074	0.094	1460.8	0.002	-1.8
700	0.000292	0.000295	4303.9	4260.4	14738063	14441578	18178668	0.081	1366.1	0.002	-1.7
800	0.000301	0.000310	4711.4	4575.5	15653719	14763574	19708868	0.061	1481.1	0.002	-1.6
900	0.000301	0.000298	4556.1	4601.7	15137973	15442732	19439074	0.107	1460.8	0.002	-1.4
1000	0.000292	0.000304	4376.7	4205.1	14986972	13834818	18209006	0.072	1368.4	0.002	-1.3
1060	0.000298	0.000301	4559.1	4513.9	15299316	14998004	19259114	0.102	1447.3	0.002	-1.3
1099	0.000310	0.000263	4407.8	4825.3	14222317	17045130	19559047	0.123	1469.8	0.002	-1.2
2000	0.000295	0.000292	4963.5	5014.1	16824490	17169929	21178682	0.087	1591.5	0.001	-2.3
3000	0.000298	0.000295	4984.8	5035.1	16727960	17067883	21269007	0.084	1598.3	0.001	-1.7
4000	0.000304	0.000298	4974.7	5074.2	16368662	17027892	21328993	0.106	1602.8	0.001	-2.1
5000	0.000310	0.000301	4659.0	4797.4	15033169	15939861	20068587	0.106	1508.1	0.002	-1.9
6000	0.000310	0.000301	4603.3	4740.0	14853899	15748870	19828641	0.125	1490.1	0.002	-1.5
7000	0.000310	0.000313	4849.3	4803.2	15647513	15351028	20488493	0.141	1539.7	0.002	-2.0
8000	0.000286	0.000289	4439.3	4393.6	15517887	15200028	18748884	0.079	1409.0	0.002	-1.1
9000	0.000310	0.000289	4902.7	5256.5	15819888	18185563	21538601	0.130	1618.6	0.001	-2.1
46174	0.000307	0.000310	4963.2	4915.4	16170154	15860569	20969074	0.112	1575.7	0.001	-1.7
50000	0.000271	0.000307	4617.1	4079.2	17026513	13290113	18388965	0.077	1381.9	0.002	-1.0
60000	0.000304	0.000304	4854.4	4854.4	15970889	15970889	20608466	0.052	1548.7	0.001	-1.6
70000	0.000289	0.000295	4833.1	4735.4	16720375	16051560	20308533	0.102	1526.2	0.001	-0.9
80000	0.000283	0.000322	5171.5	4549.0	18267613	14134750	20548479	0.083	1544.2	0.001	-1.8
90000	0.000286	0.000322	5082.7	4518.0	17767036	14038220	20308533	0.059	1526.2	0.001	-1.5
100000	0.000277	0.000322	4558.6	3925.5	16449402	12197255	17909073	0.054	1345.8	0.002	-2.2
111560	0.000265	0.000310	4872.8	4170.0	18373107	13455593	19079155	0.009	1433.7	0.002	-1.3
120000	0.000247	0.000295	4756.8	3988.0	19232224	13518337	18418614	0.046	1384.1	0.002	-0.8
129380	0.000200	0.000319	5211.7	3263.3	26103091	10234938	17038924	0.086	1280.4	0.002	-1.6
142890	0.000122	0.000334	6328.4	2316.7	51797998	6941197	14398829	0.079	1082.1	0.002	-2.0
152040	0.000077	0.000286	5503.9	1490.6	71039185	5210758	9959138	0.020	748.4	0.002	-1.1
159090	0.000074	0.000253	4228.4	1243.7	56758261	4909861	8159543	0.016	613.2	0.002	-2.3
164330	0.000066	0.000232	3725.8	1050.9	56831348	4521120	6959813	0.015	523.0	0.002	-1.6

Filename : CE1333

Material : Conventional Asphalt Concrete, California

Beam width (cm) : 4.917 Beam depth (cm) : 4.933 Bulk density (KN/m^3) : 24.05 Deflection (mm) : 0.2108

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000843	0.000417	5030.4	10168.7	5965002	24373825	20009290	2.405	2114.6	0.008	-1.5
13	0.000927	0.000420	4594.1	10132.9	4957160	24116642	18793702	0.868	1986.0	0.002	-1.5
20	0.001016	0.000441	4111.0	9471.7	4045641	21477236	17044440	1.037	1801.2	0.003	-1.5
30	0.001129	0.000444	4083.8	10387.3	3615945	23394735	17428492	1.055	1841.8	0.003	-1.5
40	0.001243	0.000465	3717.4	9937.1	2991534	21375879	16084656	1.315	1699.8	0.003	-1.5
50	0.001344	0.000471	3590.1	10247.3	2671330	21765447	15806788	1.390	1670.4	0.003	-1.5
60	0.001463	0.000510	3502.4	10056.4	2393737	19735559	15444111	1.600	1632.1	0.003	-1.5
70	0.001630	0.000521	3234.6	10110.1	1984381	19387361	14569825	1.872	1539.7	0.004	-1.5
80	0.001833	0.000524	2925.8	10223.2	1596468	19492855	13524543	2.234	1429.3	0.004	-1.5
90	0.002029	0.000551	2760.4	10161.2	1360246	18431714	12906061	2.370	1363.8	0.004	-1.5
100	0.002208	0.000569	2590.3	10049.5	1173115	17656716	12244831	2.408	1294.0	0.004	-1.3
200	0.002953	0.000647	1836.9	8389.1	622026	12972943	8959363	2.272	946.8	0.004	-1.3
300	0.003174	0.000623	1223.2	6233.2	385437	10008093	6079666	2.032	642.5	0.003	-1.2
400	0.003290	0.000638	1225.0	6320.0	372378	9910184	6100972	1.819	644.7	0.003	-1.1
500	0.003269	0.000617	865.8	4588.3	264851	7438326	4330405	1.682	457.6	0.003	-1.0
600	0.003379	0.000626	956.8	5166.6	283136	8256073	4799747	1.570	507.2	0.003	-0.9
700	0.003302	0.000590	854.3	4780.5	258735	8102315	4309099	1.459	455.4	0.003	-0.8
800	0.003403	0.000590	909.4	5244.9	267216	8889034	4607722	1.387	486.9	0.003	-0.7
900	0.003397	0.000581	869.7	5084.6	256025	8750445	4415765	1.319	466.6	0.003	-0.6
1000	0.003409	0.000575	876.4	5194.8	257080	9032450	4458445	1.280	471.2	0.003	-0.5
1059	0.003391	0.000578	831.5	4877.7	245200	8437412	4223739	1.210	446.3	0.003	-0.8

Filename : CE3330
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.956 Beam depth (cm) : 4.956 Bulk density (KN/m^3) : 24.02 Deflection (mm) : 0.1880

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000438	0.000331	5522.6	7313.5	12607508	22110886	20886334	0.209	2010.8	0.002	-1.9
13	0.000420	0.000325	5766.7	7459.7	13724498	22966556	21588935	0.213	2078.5	0.001	-1.9
20	0.000411	0.000343	5749.4	6899.1	13980992	20132711	20816695	0.173	2004.1	0.002	-1.9
30	0.000414	0.000346	6024.9	7219.8	14545692	20885645	21799922	0.224	2098.8	0.001	-1.9
40	0.000429	0.000337	5533.9	7052.2	12896408	20942873	20582265	0.163	1981.5	0.001	-1.9
50	0.000426	0.000349	5868.6	7172.9	13772073	20572612	21425523	0.206	2062.7	0.002	-1.9
60	0.000426	0.000343	5683.5	7067.4	13337688	20622945	20909777	0.154	2013.1	0.002	-1.9
70	0.000426	0.000337	5557.3	7032.9	13041203	20884955	20605708	0.171	1983.8	0.001	-1.9
80	0.000429	0.000337	5817.2	7412.8	13556949	22015046	21635821	0.192	2083.0	0.002	-1.9
90	0.000414	0.000340	5643.8	6881.5	13625210	20256821	20582265	0.189	1981.5	0.001	-1.9
100	0.000426	0.000346	5616.0	6923.3	13179103	20028596	20582265	0.182	1981.5	0.001	-1.7
200	0.000417	0.000328	5782.7	7359.7	13861019	22452878	21495163	0.193	2069.5	0.002	-1.6
300	0.000417	0.000325	5652.9	7260.4	13550054	22353590	21097321	0.262	2031.1	0.002	-1.4
400	0.000420	0.000328	5607.7	7188.0	13345962	21928858	20909777	0.182	2013.1	0.002	-1.3
500	0.000426	0.000334	5504.1	7027.4	12916404	21056641	20488493	0.183	1972.5	0.001	-1.2
600	0.000408	0.000319	5484.8	7022.6	13434908	22024699	20441607	0.215	1968.0	0.001	-1.0
700	0.000420	0.000337	5738.2	7159.8	13656927	21263491	21144207	0.241	2035.7	0.002	-1.0
800	0.000417	0.000352	5922.3	7026.7	14195426	19982400	21331751	0.211	2053.7	0.002	-0.8
900	0.000405	0.000322	5537.8	6973.6	13664511	21668227	20488493	0.225	1972.5	0.001	-1.0
1000	0.000429	0.000331	5553.4	7204.6	12941915	21780616	20816695	0.190	2004.1	0.002	-2.0
1463	0.000423	0.000352	5987.4	7205.3	14149919	20491251	21706150	0.202	2089.7	0.002	-2.9
2000	0.000420	0.000343	5834.7	7153.6	13886530	20875302	21331751	0.243	2053.7	0.002	-2.0
3000	0.000429	0.000337	5584.3	7116.3	13013623	21133865	20769809	0.187	1999.6	0.002	-0.9
4000	0.000414	0.000337	5787.7	7119.8	13973407	21142828	21191093	0.227	2040.1	0.002	-2.3
5000	0.000414	0.000340	5752.9	7014.3	13889288	20648457	20980106	0.203	2019.9	0.002	-0.9
6000	0.000423	0.000322	5415.6	7120.5	12798499	22124676	20418164	0.150	1965.7	0.002	-2.5
7000	0.000408	0.000319	5396.9	6910.2	13219784	21671675	20114094	0.173	1936.5	0.002	-1.1
8000	0.000399	0.000331	5462.9	6594.8	13681059	19937582	19832778	0.163	1909.4	0.001	-2.7
9000	0.000396	0.000319	5302.5	6591.0	13379058	20671210	19505266	0.202	1877.9	0.001	-1.3
10000	0.000370	0.000319	5434.6	6298.1	14707725	19752796	19364608	0.199	1864.3	0.001	-2.8
20000	0.000355	0.000337	5261.2	5540.5	14836661	16453539	17913210	0.211	1724.6	0.002	-1.0
30000	0.000268	0.000343	4989.8	3905.1	18605468	11395367	14540866	0.102	1399.9	0.002	-2.8
40000	0.000095	0.000265	2734.4	983.2	28675616	3707097	4800161	0.054	462.1	0.003	-2.0
50000	0.000051	0.000200	4165.9	1057.0	82236665	5294188	5596327	0.036	538.8	0.003	-1.9
60000	0.000074	0.000206	2891.5	1047.6	38812645	5095198	5104575	0.026	491.5	0.003	-2.5
70000	0.000051	0.000200	3468.7	880.1	68470798	4408111	4659710	0.020	448.6	0.003	-0.8
73319	0.000048	0.000188	3309.3	840.4	69411965	4476855	4448930	0.020	428.3	0.002	-2.6

Filename : CF1335
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.905 Beam depth (cm) : 4.917 Bulk density (KN/m^3) : 24.02 Deflection (mm) : 0.2159

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000533	0.000337	5337.7	8455.3	10006714	25110211	19055022	0.303	2037.9	0.002	-2.0
11	0.000504	0.000364	5478.4	7588.6	10878242	20874613	18528244	0.189	1981.5	0.001	-2.0
20	0.000519	0.000334	5384.2	8365.0	10383870	25062636	19076397	0.174	2040.1	0.001	-2.0
30	0.000519	0.000343	5434.6	8223.0	10481090	23995290	19055022	0.151	2037.9	0.001	-2.0
40	0.000519	0.000358	5626.5	8158.2	10851351	22814866	19392877	0.145	2074.0	0.001	-2.0
50	0.000521	0.000346	5585.4	8426.4	10710693	24376583	19561115	0.152	2092.0	0.001	-2.0
60	0.000521	0.000355	5588.3	8218.2	10716209	23174785	19371503	0.220	2071.7	0.001	-2.0
70	0.000524	0.000358	5551.7	8142.3	10585204	22770738	19223950	0.180	2055.9	0.001	-2.0
80	0.000507	0.000361	5799.3	8147.8	11447769	22596984	19730043	0.190	2110.0	0.001	-2.0
90	0.000521	0.000358	5637.8	8221.6	10811360	22992067	19476996	0.198	2083.0	0.001	-2.0
100	0.000519	0.000370	5746.5	8063.7	11083023	21822675	19540430	0.196	2089.7	0.001	-1.9
200	0.000533	0.000358	5610.7	8369.2	10519012	23405078	19561115	0.168	2092.0	0.001	-1.8
300	0.000533	0.000352	5681.3	8618.1	10651396	24509657	19940340	0.198	2132.6	0.001	-1.7
400	0.000521	0.000358	5778.1	8426.4	11080265	23564352	19961715	0.194	2134.8	0.001	-1.6
500	0.000521	0.000364	5706.8	8185.7	10943055	22517002	19582490	0.209	2094.3	0.001	-1.6
600	0.000521	0.000375	5901.9	8196.8	11317453	21831639	19983089	0.188	2137.1	0.001	-1.9
700	0.000530	0.000375	5996.2	8471.2	11304353	22561130	20446433	0.237	2186.7	0.001	-2.5
800	0.000530	0.000384	6061.7	8364.3	11427773	21758552	20467808	0.263	2188.9	0.002	-2.8
900	0.000554	0.000370	5737.0	8605.6	10350774	23289242	20045834	0.227	2143.8	0.001	-2.9
1000	0.000560	0.000355	5626.9	8889.7	10043947	25068841	20067208	0.254	2146.1	0.001	-2.8
1061	0.000554	0.000375	5919.7	8738.7	10680355	23274073	20551927	0.264	2197.9	0.001	-2.8
1105	0.000551	0.000381	5842.2	8443.6	10597615	22137087	20109268	0.261	2150.6	0.001	-2.7
1140	0.000554	0.000367	5784.6	8747.7	10436272	23865664	20278195	0.204	2168.7	0.001	-2.6
1196	0.000560	0.000355	5644.7	8917.3	10075664	25147444	20130642	0.269	2152.9	0.001	-2.6
1231	0.000566	0.000372	5712.8	8683.6	10090143	23311995	20067208	0.244	2146.1	0.002	-2.6
1361	0.000575	0.000367	5647.8	8862.1	9819859	24178007	20087893	0.280	2148.4	0.001	-2.5
1396	0.000587	0.000390	5839.7	8781.5	9947417	22496317	20425748	0.249	2184.4	0.001	-2.5
1449	0.000596	0.000375	5604.9	8896.6	9404091	23694668	20025149	0.285	2141.6	0.001	-2.4
1485	0.000581	0.000378	5875.3	9021.4	10110828	23837394	20720854	0.275	2216.0	0.002	-2.4
1520	0.000593	0.000390	5750.2	8735.3	9696439	22376344	20193387	0.236	2159.6	0.001	-2.4
1555	0.000602	0.000378	5659.4	9001.4	9402022	23785682	20235446	0.256	2164.1	0.001	-2.3
2000	0.000712	0.000390	5177.7	9446.2	7270088	24198003	19476996	0.487	2083.0	0.001	-1.9
3000	0.003358	0.000599	1194.2	6696.0	355596	11179553	5902120	2.247	631.2	0.004	-0.6
4000	0.003996	0.000647	912.6	5639.3	228362	8720796	4574143	1.947	489.2	0.003	-2.0
5000	0.004035	0.000629	853.5	5476.7	211525	8710454	4300067	1.596	459.9	0.003	-1.1

Filename : CC3335
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.945 Beam depth (cm) : 4.973 Bulk density (KN/m^3) : 24.01 Deflection (mm) : 0.2464

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000492	0.000426	7010.1	8088.5	14256792	18980556	18948150	0.150	2412.1	0.001	-11.7
10	0.000447	0.000402	6374.8	7083.2	14261618	17607072	16929294	0.136	2155.1	0.001	-11.7
20	0.000420	0.000387	6178.7	6701.6	14705656	17299555	16221177	0.124	2064.9	0.001	-11.7
30	0.000417	0.000361	5692.3	6586.2	13644516	18266234	15406878	0.103	1961.2	0.001	-11.7
40	0.000399	0.000364	5504.7	6046.2	13785863	16630740	14538797	0.086	1850.8	0.001	-11.7
50	0.000378	0.000355	5268.5	5622.7	13921695	15856432	13724498	0.079	1747.1	0.001	-11.7
60	0.000367	0.000319	4777.6	5492.0	13034998	17224400	12892271	0.079	1641.1	0.001	-11.7
70	0.000334	0.000310	4413.1	4752.5	13222542	15335170	11546367	0.068	1469.8	0.001	-11.7
80	0.000295	0.000280	4098.3	4316.3	13892046	15408946	10607268	0.054	1350.3	0.001	-11.7
90	0.000274	0.000274	3958.8	3958.8	14440199	14440199	9988097	0.049	1271.4	0.001	-11.7
100	0.000271	0.000277	3832.0	3749.6	14131303	13530059	9562676	0.061	1217.3	0.001	-12.0
200	0.000223	0.000247	3371.4	3046.5	15085571	12317228	8075424	0.046	1028.0	0.001	-12.2
300	0.000223	0.000226	3010.1	2970.5	13468693	13116359	7543820	0.041	960.4	0.001	-12.2
400	0.000212	0.000226	2993.7	2796.7	14149919	12348945	7296289	0.032	928.8	0.001	-12.1
500	0.000212	0.000218	2847.2	2769.2	13457661	12730239	7083234	0.032	901.7	0.001	-12.1
600	0.000218	0.000218	2758.6	2758.6	12681284	12681284	6959813	0.034	886.0	0.001	-12.1
700	0.000209	0.000206	2676.1	2714.9	12829527	13203925	6800194	0.026	865.7	0.001	-12.0
800	0.000203	0.000221	2763.0	2538.9	13635552	11513961	6676222	0.023	849.9	0.001	-12.0
900	0.000197	0.000215	2722.5	2495.6	13842402	11631865	6569970	0.020	836.3	0.000	-11.9
1000	0.000197	0.000203	2608.0	2531.2	13260464	12491672	6481438	0.012	825.1	0.001	-11.8
1200	0.000194	0.000194	2498.8	2498.8	12901235	12901235	6304305	0.025	802.5	0.001	-11.7
1499	0.000197	0.000194	2403.3	2440.3	12219319	12598544	6109522	0.014	777.7	0.001	-12.1
1514	0.000188	0.000200	2498.5	2349.3	13308729	11767007	6109522	0.026	777.7	0.001	-12.1
2000	0.000176	0.000191	2443.7	2252.8	13899631	11812514	5914738	0.025	752.9	0.001	-11.8

Filename : CC4320
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.981 Beam depth (cm) : 4.940 Bulk density (KN/m^3) : 23.90 Deflection (mm) : 0.1219

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000271	0.000280	5190.4	5024.7	19140520	17938032	26207206	0.000	1629.9	0	-12.1
13	0.000262	0.000286	5065.1	4643.0	19315653	16230141	24866128	0.012	1546.5	0	-12.1
20	0.000259	0.000271	4898.5	4683.2	18894369	17269907	24576538	0.010	1528.4	0	-12.1
30	0.000253	0.000268	4900.1	4627.9	19345991	17256117	24431054	0.003	1519.4	0	-12.1
40	0.000253	0.000280	5004.7	4525.5	19759002	16156364	24395200	0.012	1517.1	0	-12.1
50	0.000253	0.000253	4746.0	4746.0	18737163	18737163	24358656	0.012	1514.9	0	-12.1
70	0.000250	0.000286	5085.1	4449.4	20314739	15553741	24358656	0.010	1514.9	0	-12.1
80	0.000253	0.000274	4926.8	4551.9	19450795	16603850	24286259	0.010	1510.4	0	-12.1
90	0.000253	0.000268	4871.1	4600.5	19230845	17153381	24286259	0.001	1510.4	0	-12.1
100	0.000256	0.000268	4849.2	4633.6	18921949	17277491	24322802	0.009	1512.6	0	-12.2
200	0.000262	0.000277	4895.4	4632.2	18668213	16714859	24431054	0.002	1519.4	0	-12.2
300	0.000247	0.000265	4954.2	4620.2	20030665	17420907	24539995	0.006	1526.2	0	-12.1
400	0.000247	0.000280	5135.8	4534.8	20764982	16189460	24721333	0.002	1537.4	0	-12.1
500	0.000256	0.000265	4900.7	4735.5	19122593	17855292	24721333	0.004	1537.4	0	-12.0
600	0.000259	0.000280	5032.5	4657.7	19411494	16627982	24830274	0.018	1544.2	0	-11.9
700	0.000250	0.000271	5054.1	4665.4	20191318	17204404	24902672	0.006	1548.7	0	-11.8
800	0.000253	0.000277	5102.5	4663.6	20144432	16827937	25011613	0.004	1555.5	0	-11.7
900	0.000262	0.000265	4893.7	4838.8	18662007	18244860	24975069	0.003	1553.2	0	-11.7
1000	0.000262	0.000277	5026.1	4755.9	19168721	17160966	25084010	0.003	1560.0	0	-11.8
2000	0.000253	0.000274	5294.4	4891.6	20902193	17842881	26098954	0.011	1623.1	0	-11.7
3000	0.000262	0.000280	5419.1	5073.1	20665005	18111097	26896016	0.016	1672.7	0	-11.9
4000	0.000262	0.000292	5657.6	5080.3	21574455	17396085	27475886	0.001	1708.8	0	-11.9
5000	0.000265	0.000298	5804.2	5165.7	21885420	17335409	28056445	0.006	1744.8	0	-11.9
6000	0.000259	0.000280	5833.2	5398.9	22500454	19274283	28781109	0.009	1789.9	0	-11.8
7000	0.000265	0.000289	5955.6	5464.4	22456326	18904711	29252038	0.010	1819.2	0	-11.8
8000	0.000259	0.000289	6086.8	5459.3	23478165	18886784	29542317	0.012	1837.3	0	-11.7
9000	0.000262	0.000280	6069.0	5681.7	23143757	20283711	30122187	0.000	1873.3	0	-11.9
10000	0.000262	0.000295	6265.8	5569.6	23893933	18879200	30266982	0.007	1882.4	0	-11.9
20000	0.000271	0.000298	6767.0	6157.9	24954384	20665005	33094621	0.008	2058.2	0	-12.1
30000	0.000271	0.000298	6648.4	6050.0	24517241	20303017	32514752	0.000	2022.1	0	-12.1
40000	0.000256	0.000301	6764.8	5760.1	26396818	19138452	31934882	0.003	1986.0	0	-12.1
50000	0.000265	0.000298	6516.6	5799.8	24571022	19463206	31499808	0.010	1959.0	0	-12.1
60000	0.000262	0.000295	6445.9	5729.7	24580675	19421836	31137131	0.005	1936.5	0	-12.1
70000	0.000268	0.000295	6295.9	5723.5	23475407	19401151	30774454	0.013	1913.9	0	-12.2
80000	0.000262	0.000289	6183.9	5610.2	23581590	19408736	30194584	0.004	1877.9	0	-11.8
90000	0.000250	0.000298	6327.4	5315.0	25277760	17835986	29651258	0.012	1844.0	0	-11.2
100000	0.000259	0.000298	6095.0	5302.6	23509882	17794616	29107243	0.006	1810.2	0	-10.6
200000	0.000250	0.000283	5839.4	5163.3	23328543	18238654	28128842	0.011	1749.3	0	-11.7
300000	0.000238	0.000271	5721.5	5029.8	24000116	18548240	27475886	0.010	1708.8	0	-12.5
400000	0.000194	0.000274	5603.8	3959.2	28931420	14441578	23815330	0.000	1481.1	0	-11.8
500000	0.000170	0.000235	4827.8	3483.4	28423259	14796870	20770498	0.003	1291.7	0	-12.0
600000	0.000146	0.000200	4087.9	2989.7	27996458	14974561	17725666	0.008	1102.4	0	-12.0

Filename : CB6330
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 5.022 Beam depth (cm) : 4.999 Bulk density (KN/m^3) : 23.58 Deflection (mm) : 0.2032

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000259	0.000232	4665.4	5203.7	17995261	22388065	14973182	0.047	1620.9	0.001	-11.4
13	0.000235	0.000200	3996.1	4711.8	16974801	23599517	13161866	0.051	1424.7	0.001	-11.4
20	0.000223	0.000203	4090.1	4511.1	18300709	22262576	13057751	0.045	1413.5	0.001	-11.4
30	0.000226	0.000221	4267.6	4382.9	18844035	19876217	13161866	0.041	1424.7	0.000	-11.4
40	0.000221	0.000185	3961.3	4728.0	17964233	25590793	13119806	0.032	1420.2	0.000	-11.4
50	0.000229	0.000209	4121.4	4533.6	17962165	21733730	13140491	0.038	1422.5	0.000	-11.4
60	0.000232	0.000194	3951.6	4741.9	17001002	24481387	13119806	0.049	1420.2	0.001	-11.4
70	0.000218	0.000197	4097.6	4532.2	18837140	23044469	13099121	0.046	1417.9	0.000	-11.4
80	0.000229	0.000185	3891.0	4832.3	16957563	26155493	13119806	0.053	1420.2	0.001	-11.4
90	0.000212	0.000203	4233.2	4419.9	20007911	21812333	13161866	0.045	1424.7	0.000	-11.4
100	0.000226	0.000206	4118.9	4536.7	18186942	22064000	13140491	0.044	1422.5	0.001	-11.7
200	0.000218	0.000218	4338.2	4338.2	19942409	19942409	13203236	0.054	1429.3	0.001	-11.8
300	0.000223	0.000191	4051.8	4748.2	18129024	24896466	13307350	0.050	1440.5	0.000	-11.9
400	0.000229	0.000197	4085.5	4766.4	17805648	24235236	13390780	0.055	1449.5	0.001	-11.9
500	0.000218	0.000200	4251.8	4632.5	19545257	23203054	13494894	0.053	1460.8	0.001	-12.0
600	0.000232	0.000203	4156.2	4767.4	17881493	23527119	13515579	0.059	1463.0	0.001	-12.1
700	0.000232	0.000200	4146.8	4827.6	17840813	24180076	13578324	0.059	1469.8	0.001	-12.1
800	0.000238	0.000194	4061.7	4999.1	17038235	25808675	13640379	0.043	1476.6	0.001	-12.2
900	0.000241	0.000200	4107.1	4965.3	17015481	24869576	13682438	0.051	1481.1	0.001	-12.2
1000	0.000223	0.000200	4242.8	4749.5	18984004	23788440	13640379	0.047	1476.6	0.001	-12.1
1428	0.000244	0.000200	4072.0	4983.6	16664526	24961279	13640379	0.035	1476.6	0.000	-11.9
2000	0.000235	0.000200	4103.6	4838.6	17431250	24234546	13515579	0.046	1463.0	0.000	-11.9
3000	0.000244	0.000212	4283.4	4947.1	17529848	23382324	13974097	0.054	1512.6	0.001	-12.1
4000	0.000232	0.000221	4467.0	4708.5	19218434	21352436	13952722	0.054	1510.4	0.001	-12.1
5000	0.000244	0.000212	4334.5	5006.0	17738767	23660882	14140266	0.054	1530.7	0.001	-11.8
6000	0.000241	0.000229	4631.5	4872.1	19188096	21233842	14452610	0.043	1564.5	0.001	-12.2
7000	0.000232	0.000215	4506.9	4882.5	19390119	22756258	14265066	0.047	1544.2	0.000	-11.9
8000	0.000265	0.000215	4381.9	5416.5	16522489	25245353	14744268	0.065	1596.0	0.001	-12.1
9000	0.000259	0.000250	4747.6	4917.2	18312431	19643855	14702898	0.047	1591.5	0.000	-12.0
10000	0.000250	0.000256	5033.8	4916.8	20109957	19185338	15140041	0.055	1638.9	0.000	-12.2
20000	0.000274	0.000244	5157.2	5786.1	18811629	23679499	16597644	0.045	1796.7	0.000	-12.0
30000	0.000215	0.000247	5148.4	4466.0	23995290	18056626	14556724	0.011	1575.7	0.000	-11.9
40000	0.000155	0.000176	3637.0	3205.5	23471270	18231759	10370770	0.015	1122.6	0.000	-11.8
50000	0.000119	0.000158	3380.7	2551.4	28361893	16154985	8851112	0.000	958.1	0.000	-10.6
60000	0.000110	0.000146	3061.6	2311.8	27768234	15832989	8017506	0.013	867.9	0.000	-9.6
70000	0.000116	0.000119	2425.6	2365.0	20871165	19841052	7288705	0.003	789.0	0.000	-8.8
80000	0.000110	0.000122	2300.8	2076.3	20867718	16994107	6643264	0.002	719.1	0.000	-8.0
90000	0.000104	0.000116	2220.7	1992.9	21292450	17148555	6393389	0.001	692.1	0.000	-7.3
100000	0.000092	0.000101	1980.0	1805.2	21433108	17818059	5747810	0.004	622.2	0.001	-7.0
129990	0.000066	0.000080	1676.5	1366.0	25571487	16977559	4581590	0.003	496.0	0.001	-3.5

Filename : CF3330
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.930 Beam depth (cm) : 4.930 Bulk density (KN/m³) : 24.04 Deflection (mm) : 0.1727

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m³)	Max load (N)	Lag (sec)	Temp (C)
1	0.000286	0.000265	4666.8	5033.8	16313570	18980556	17583629	0.094	1523.9	0.002	-12.8
13	0.000259	0.000262	4554.1	4502.4	17568392	17169240	16439059	0.078	1424.7	0.002	-12.8
20	0.000223	0.000215	2731.3	2845.2	12221388	13260464	10118413	0.077	876.9	0.002	-12.8
30	0.000188	0.000188	2944.7	2944.7	15685436	15685436	10690698	0.055	926.5	0.002	-12.8
40	0.000238	0.000238	4492.3	4492.3	18844035	18844035	16308744	0.103	1413.5	0.001	-12.8
50	0.000223	0.000212	4226.1	4464.2	18908848	21099390	15762660	0.048	1366.1	0.001	-12.8
60	0.000221	0.000215	4254.9	4373.1	19295658	20382310	15658545	0.114	1357.1	0.001	-12.8
70	0.000221	0.000215	4028.7	4140.7	18269682	19299105	14826319	0.080	1284.9	0.001	-12.8
80	0.000212	0.000226	4094.2	3824.9	19351507	16888613	14358148	0.116	1244.4	0.002	-12.8
90	0.000212	0.000206	3779.1	3888.7	17862187	18912296	13915489	0.080	1206.0	0.002	-12.8
100	0.000223	0.000209	3774.7	4044.3	16889303	19388051	14176120	0.077	1228.6	0.002	-12.9
200	0.000197	0.000191	3824.4	3944.0	19445969	20680174	14097517	0.082	1221.8	0.001	-12.9
300	0.000200	0.000176	3294.4	3741.1	16500425	21278660	12719207	0.075	1102.4	0.001	-12.9
400	0.000209	0.000182	3171.1	3638.9	15202096	20018943	12303438	0.058	1066.3	0.001	-12.9
500	0.000200	0.000182	3230.4	3548.1	16179807	19519056	12277237	0.054	1064.0	0.001	-12.9
600	0.000209	0.000203	3425.3	3526.0	16420443	17400912	12615092	0.053	1093.3	0.002	-12.9
700	0.000203	0.000197	3501.5	3607.5	17279560	18342769	12901235	0.074	1118.2	0.001	-12.8
800	0.000203	0.000191	3602.2	3827.3	17776689	20068587	13473520	0.076	1167.7	0.001	-12.8
900	0.000188	0.000164	3146.9	3604.6	16762435	21993671	12199324	0.076	1057.3	0.001	-12.7
1000	0.000170	0.000152	2681.1	2996.6	15784724	19717632	10274240	0.052	690.4	0.002	-12.6
2000	0.000182	0.000185	4269.1	4200.2	23485749	22734194	15372403	0.047	1332.3	0.000	-12.6
3000	0.000164	0.000164	4814.7	4814.7	29376837	29376837	17479515	0.034	1514.9	0.000	-12.9
4000	0.000232	0.000203	3741.6	4291.9	16097757	21180751	14513975	0.099	1257.9	0.002	-12.4
5000	0.000218	0.000218	2822.9	2822.9	12977080	12977080	10248039	0.076	888.2	0.002	-12.6
6000	0.000215	0.000212	2981.2	3023.2	13894804	14289198	10898237	0.078	944.6	0.002	-12.9
7000	0.000212	0.000203	2770.3	2892.5	13093605	14274719	10274240	0.083	890.4	0.002	-12.3
8000	0.000238	0.000229	4471.3	4645.6	18756469	20246478	16543174	0.086	1433.7	0.001	-12.6
10000	0.000212	0.000212	2923.2	2923.2	13816891	13816891	10612095	0.077	919.8	0.002	-10.9
20000	0.000247	0.000238	4812.2	4992.6	19456311	20942873	17791169	0.052	1541.9	0.000	-11.2
30000	0.000253	0.000256	5131.3	5071.7	20258200	19790029	18519970	0.052	1605.1	0.001	-11.9
50000	0.000292	0.000262	5051.8	5625.9	17298866	21453793	19325996	0.136	1674.9	0.001	-12.3
60000	0.000280	0.000271	4744.9	4901.4	16939636	18074553	17505026	0.067	1517.1	0.002	-11.5
70000	0.000286	0.000256	5012.2	5595.0	17520885	21832328	19195680	0.073	1663.7	0.001	-11.8
80000	0.000301	0.000262	4840.0	5555.0	16081209	21183509	18779912	0.094	1627.6	0.002	-12.2
90000	0.000301	0.000280	5332.6	5729.7	17718082	20455397	20054108	0.107	1738.1	0.001	-12.1
100000	0.000298	0.000262	5273.4	5992.5	17696707	22852099	20368451	0.043	1765.1	0.002	-12.1
150370	0.000319	0.000277	5075.6	5839.7	15918487	21071810	19716253	0.111	1708.8	0.002	-12.0
200000	0.000313	0.000289	5272.3	5707.1	16850001	19743833	19898281	0.114	1724.6	0.002	-12.2
257830	0.000340	0.000307	5366.7	5939.8	15797824	19352197	20470566	0.133	1774.1	0.002	-10.9
300000	0.000358	0.000352	6280.9	6387.3	17564323	18164878	22993446	0.129	1992.8	0.002	-11.3
355720	0.000346	0.000343	6363.4	6418.8	18408961	18730268	23201675	0.134	2010.8	0.001	-11.1
400000	0.000343	0.000343	5889.4	5889.4	17185788	17185788	21380706	0.111	1853.0	0.002	-11.3
448710	0.000292	0.000319	5455.5	4996.6	18681313	15670267	18935739	0.066	1641.1	0.003	-12.2
500000	0.000212	0.000241	4225.6	3704.1	19973436	15346202	14331947	0.043	1242.1	0.002	-11.7
542750	0.000167	0.000206	3710.3	3011.3	22234307	14644980	12069008	0.071	1046.0	0.002	-11.5

Filename : CF5335
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 4.895 Beam depth (cm) : 4.948 Bulk density (KN/m^3) : 23.64 Deflection (mm) : 0.2540

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000662	0.000513	6949.5	8969.7	10505222	17500200	19263251	0.749	2464.0	0.003	-11.8
13	0.000620	0.000501	6411.3	7937.5	10343879	15855742	17448487	0.278	2231.8	0.001	-11.8
20	0.000569	0.000471	6192.6	7485.9	10880310	15899870	16672800	0.241	2132.6	0.001	-11.8
30	0.000554	0.000486	6123.8	6988.1	11048548	14386418	16055697	0.224	2053.7	0.001	-11.8
40	0.000516	0.000474	6022.6	6552.9	11682199	13830681	15439284	0.186	1974.8	0.001	-11.8
50	0.000519	0.000462	5710.4	6410.4	11013384	13878256	14857346	0.162	1900.4	0.001	-11.8
60	0.000492	0.000453	5478.7	5947.3	11143010	13130149	14029257	0.123	1794.4	0.001	-11.8
70	0.000450	0.000456	5380.5	5310.2	11957309	11647034	13148076	0.102	1681.7	0.001	-11.8
80	0.000414	0.000435	5141.8	4895.3	12413758	11251951	12337224	0.080	1578.0	0.001	-11.8
90	0.000393	0.000408	4818.5	4642.6	12249657	11371924	11631865	0.084	1487.9	0.001	-11.8
100	0.000387	0.000408	4635.5	4398.7	11966273	10774127	11103708	0.066	1420.2	0.001	-11.7
200	0.000304	0.000370	4111.8	3382.3	13527990	9153113	9129670	0.057	1167.7	0.001	-11.6
300	0.000283	0.000355	3889.8	3105.3	13740356	8756650	8495330	0.053	1086.6	0.001	-11.5
400	0.000280	0.000337	3589.6	2986.0	12815047	8867660	8018885	0.043	1025.7	0.001	-11.4
500	0.000277	0.000313	3340.8	2959.0	12054529	9456493	7719642	0.042	987.4	0.001	-11.3
600	0.000247	0.000316	3450.7	2702.0	13952033	8553937	7454874	0.054	953.6	0.001	-11.4
700	0.000253	0.000298	3228.0	2743.9	12744718	9207583	7296289	0.035	933.3	0.001	-11.6
800	0.000241	0.000292	3214.2	2656.7	13316314	9097263	7155631	0.032	915.2	0.001	-11.8
900	0.000250	0.000301	3148.1	2618.2	12576480	8699422	7032211	0.029	899.5	0.001	-11.9
1000	0.000247	0.000298	3104.3	2576.5	12550969	8646330	6926717	0.042	886.0	0.001	-12.0
1552	0.000218	0.000274	2939.4	2332.4	13512132	8507741	6397664	0.030	818.3	0.001	-11.9

Filename : CG5325
Material : Conventional Asphalt Concrete, California
Beam width (cm) : 5.047 Beam depth (cm) : 5.123

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)
1	0.000384	0.000343	6614.0	7419.0
13	0.000372	0.000352	6715.7	7114.3
20	0.000381	0.000283	5900.0	7949.2
30	0.000370	0.000289	5966.4	7627.2
40	0.000370	0.000280	5817.0	7673.4
50	0.000364	0.000268	5676.4	7694.8
60	0.000381	0.000280	5575.6	7592.1
70	0.000370	0.000274	5532.2	7456.3
80	0.000364	0.000271	5499.5	7372.8
90	0.000355	0.000286	5661.8	7018.4
100	0.000367	0.000271	5424.0	7331.5
200	0.000352	0.000265	5389.3	7145.3
300	0.000355	0.000268	5372.9	7103.9
400	0.000352	0.000277	5464.5	6933.6
500	0.000340	0.000277	5543.1	6794.8
600	0.000352	0.000262	5329.4	7146.0
700	0.000355	0.000277	5467.4	6995.7
800	0.000352	0.000256	5300.0	7272.2
900	0.000352	0.000262	5380.3	7214.2
1000	0.000343	0.000259	5424.8	7170.8
2000	0.000367	0.000259	5300.5	7494.2
3000	0.000364	0.000259	5296.3	7427.3
4000	0.000361	0.000256	5372.2	7558.3
5000	0.000358	0.000277	5550.9	7162.5
6000	0.000352	0.000259	5416.1	7345.9
7000	0.000352	0.000265	5520.1	7319.0
8000	0.000361	0.000268	5481.6	7369.4
9000	0.000358	0.000277	5608.5	7237.0
10000	0.000364	0.000262	5477.9	7594.2
15911	0.000370	0.000283	5780.7	7545.2
20000	0.000378	0.000280	5752.1	7771.4
30000	0.000372	0.000295	5964.1	7530.7
40000	0.000286	0.000316	6771.2	6132.4
50000	0.000095	0.000316	7504.5	2265.6
60000	0.000089	0.000298	5813.8	1744.2
70000	0.000060	0.000301	6979.8	1382.2
80000	0.000057	0.000304	6851.8	1276.3
90000	0.000057	0.000298	6373.3	1210.9

Bulk density (KN/m^3) : 24.07 Deflection (mm) : 0.1537

Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
17205783	21649611	27460717	0.055	2432.4	0.001	-12.7
18029046	20231999	27129757	0.040	2403.1	0.000	-12.7
15468243	28080577	26595394	0.058	2355.7	0.000	-12.7
16146711	26386476	26289946	0.038	2328.7	0.000	-12.7
15742664	27394525	25984497	0.046	2301.6	0.000	-12.7
15613728	28690785	25654227	0.045	2272.3	0.000	-12.7
14617400	27104935	25246732	0.049	2236.3	0.000	-12.7
14971803	27198017	24941284	0.048	2209.2	0.000	-12.7
15127630	27189054	24737881	0.036	2191.2	0.000	-12.7
15966062	24533100	24610324	0.056	2179.9	0.000	-12.7
14798049	27035985	24483456	0.048	2168.7	0.000	-13.0
15326896	26942213	24126984	0.031	2137.1	0.000	-13.1
15151763	26489211	24024938	0.051	2128.1	0.000	-13.2
15540641	25018508	23999427	0.038	2125.8	0.000	-13.3
16317018	24518620	23973915	0.028	2123.5	0.000	-13.3
15155900	27251109	23973915	0.043	2123.5	0.001	-13.4
15417910	25243974	24101473	0.012	2134.8	0.000	-13.4
15072470	28376373	24075961	0.045	2132.6	0.000	-13.4
15300695	27511740	24203519	0.049	2143.8	0.000	-13.5
15830231	27659293	24254542	0.048	2148.4	0.000	-13.5
14461573	28905219	24381410	0.040	2159.6	0.000	-13.4
14568446	28648036	24279364	0.052	2150.6	0.000	-13.2
14898716	29494052	24661347	0.066	2184.4	0.001	-13.3
15523403	25845218	24559301	0.064	2175.4	0.000	-13.0
15402741	28335003	24483456	0.045	2168.7	0.000	-13.3
15698536	27595859	24712370	0.057	2188.9	0.000	-13.3
15202786	27479333	24686858	0.040	2186.7	0.000	-13.0
15684057	26112744	24814416	0.054	2197.9	0.000	-13.3
15067644	28960379	24992307	0.054	2213.7	0.000	-13.2
15644066	26653312	25704560	0.058	2276.8	0.000	-13.1
15199338	27744101	25959675	0.041	2299.4	0.000	-13.2
16011569	25525980	26137566	0.013	2315.2	0.000	-13.2
23669846	19414252	25272244	-0.047	2238.5	0.000	-13.4
78699530	7172869	13666580	-0.026	1210.6	0.000	-12.9
65033640	5853028	10536250	-0.001	933.3	0.000	-13.4
117111575	4592277	9060030	0.003	802.5	0.001	-13.1
121021040	4199124	8449823	-0.005	748.4	0.001	-13.4
112567770	4063637	7991305	0.005	707.9	0.001	-13.4

Filename : CG6327

Material : Conventional Asphalt Concrete, California

Beam width (cm) : 5.060   Beam depth (cm) : 5.11

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)
1	0.000441	0.000355	6592.7	8199.5
10	0.000402	0.000328	6178.5	7582.4
20	0.000387	0.000331	6118.8	7166.0
30	0.000387	0.000319	5887.1	7152.2
40	0.000390	0.000325	5803.1	6974.3
50	0.000375	0.000304	5649.5	6979.1
60	0.000372	0.000331	5796.5	6527.6
70	0.000367	0.000307	5551.6	6629.7
80	0.000355	0.000304	5496.8	6413.0
90	0.000352	0.000298	5360.2	6325.1
100	0.000343	0.000280	5137.3	6285.1
200	0.000173	0.000170	2175.0	2213.2
300	0.000152	0.000158	1714.1	1649.4
400	0.000146	0.000125	1464.6	1708.7
500	0.000152	0.000140	1440.6	1563.2
600	0.000140	0.000146	1471.6	1411.5
700	0.000125	0.000131	1422.1	1357.5
800	0.000137	0.000119	1286.3	1479.3
900	0.000134	0.000125	1305.1	1398.3
1000	0.000122	0.000119	1308.0	1340.7

3 Bulk density (KN/m^3) : 24.04 Deflection (mm) : 0.1740

Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
14948360	23121693	25397733	0.165	2538.4	0.001	-12.4
15357923	23132725	23660882	0.062	2364.8	0.000	-12.4
15795066	21664780	22938976	0.072	2292.6	0.000	-12.4
15196580	22432193	22442536	0.057	2243.0	0.000	-12.4
14865620	21472409	22014356	0.049	2200.2	0.000	-12.4
15046269	22960350	21698565	0.070	2168.7	0.000	-12.4
15561326	19734180	21337267	0.054	2132.6	0.000	-12.4
15146936	21599967	20999412	0.053	2098.8	0.000	-12.4
15501339	21098700	20570543	0.041	2055.9	0.000	-12.4
15244156	21225568	20164428	0.066	2015.4	0.000	-12.4
14991109	22437709	19645924	0.055	1963.5	0.000	-12.2
12584065	13029482	7623802	0.029	762.0	0.000	-12.2
11278841	10443857	5841858	0.017	583.9	0.001	-12.1
10030846	13652790	5480973	0.005	547.8	0.000	-12.3
9479246	11160937	5210345	0.010	520.7	0.001	-12.6
10507291	9667480	5007356	0.011	500.4	0.001	-12.7
11362960	10353532	4826914	0.016	482.4	0.001	-12.8
9384095	12410311	4781751	0.011	477.9	0.000	-12.9
9732293	11172658	4691565	0.007	468.9	0.000	-12.8
10705867	11247814	4601309	0.018	459.9	0.000	-12.8

Filename : CG8326

Material : Conventional Asphalt Concrete, California

Beam width (cm) : 4.618 Beam depth (cm) : 5.044

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)
1	0.000450	0.000361	6258.5	7810.0
13	0.000411	0.000381	6330.8	6825.4
20	0.000405	0.000414	6560.0	6418.4
30	0.000426	0.000349	5858.7	7160.5
40	0.000423	0.000364	5977.1	6957.1
50	0.000414	0.000364	6029.9	6870.1
60	0.000423	0.000334	5731.1	7266.0
70	0.000426	0.000387	6116.8	6728.4
80	0.000426	0.000381	6065.0	6775.8
90	0.000447	0.000367	5831.3	7111.5
100	0.000411	0.000381	6175.9	6658.4
200	0.000417	0.000328	5714.9	7273.5
300	0.000408	0.000337	5846.8	7088.7
400	0.000408	0.000358	6017.3	6869.8
500	0.000429	0.000375	6034.9	6897.1
600	0.000435	0.000372	5960.7	6961.9
700	0.000426	0.000334	5713.5	7294.9
800	0.000435	0.000495	6862.6	6035.7
900	0.000447	0.000441	6365.3	6451.4
1000	0.000444	0.000408	6129.0	6665.8
2000	0.000486	0.000313	5255.9	8159.5
3000	0.000536	0.000447	5847.2	7017.0
4000	0.000539	0.000349	4932.3	7630.0
5000	0.000471	0.000355	4400.3	5842.3
6000	0.000221	0.000209	2203.8	2329.8
6531	0.000200	0.000221	2022.1	1830.8

Bulk density (KN/m^3) : 23.85 Deflection (mm) : 0.1676

Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
13908594	21660643	25401870	0.249	2143.8	0.001	-12.1
15395156	17894594	24013217	0.073	2026.6	0.000	-12.1
16186702	15495823	23719490	0.105	2001.8	0.000	-12.1
13748630	20538137	23558836	0.151	1988.3	0.001	-12.1
14125097	19136383	23505745	0.102	1983.8	0.000	-12.1
14557414	18897127	23478854	0.069	1981.5	0.000	-12.1
13543849	21771652	23425763	0.089	1977.0	0.000	-12.1
14354011	17368505	23425763	0.105	1977.0	0.000	-12.1
14232659	17764278	23398872	0.093	1974.8	0.001	-12.1
13046030	19401841	23425763	0.107	1977.0	0.000	-12.1
15018000	17456072	23425763	0.084	1977.0	0.000	-12.1
13698986	22189489	23398872	0.095	1974.8	0.000	-12.1
14321605	21051125	23425763	0.052	1977.0	0.000	-12.1
14739442	19211539	23451964	0.101	1979.3	0.001	-12.0
14063732	18368970	23532635	0.120	1986.0	0.000	-12.0
13701055	18690966	23478854	0.120	1981.5	0.001	-12.0
13408017	21857150	23425763	0.136	1977.0	0.001	-11.9
15773692	12201392	23478854	0.075	1981.5	0.001	-11.8
14240244	14627743	23425763	0.115	1977.0	0.001	-11.8
13803790	16328050	23345091	0.130	1970.3	0.001	-11.7
10821013	26076890	23371982	0.171	1972.5	0.001	-11.8
10900995	15697847	23318890	0.222	1968.0	0.001	-11.9
9144839	21885420	21902657	0.181	1848.5	0.001	-11.2
9345483	16475603	18350353	0.148	1548.7	0.001	-12.0
9994303	11169211	8280206	0.032	698.8	0.001	-11.4
10128066	8302270	7025316	0.033	592.9	0.001	-11.7

Filename : RI1225
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 5.055 Beam depth (cm) : 5.070 Bulk density (KN/m^3) : 23.27 Deflection (mm) : 0.4623

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000864	0.000951	752.2	683.8	870425	719355	844891	0.721	244.4	0.016	32.3
11	0.000867	0.000936	714.5	662.1	823684	707634	906555	0.656	234.4	0.016	32.3
23	0.000802	0.000909	513.3	452.7	640339	498095	634588	0.641	164.1	0.017	32.3
30	0.000805	0.000900	478.8	428.1	595107	475672	596231	0.623	154.2	0.017	32.3
40	0.000814	0.000894	435.5	396.3	535376	443349	547415	0.650	141.6	0.017	32.3
50	0.000858	0.000909	459.9	434.3	535907	477830	589260	0.643	152.4	0.017	32.3
60	0.000819	0.000897	459.6	419.9	560784	468088	578801	0.617	149.7	0.017	32.3
70	0.000900	0.000906	533.1	529.6	592356	584593	700808	0.637	181.2	0.017	32.3
80	0.000888	0.000930	549.2	524.6	618475	564218	707841	0.656	183.1	0.017	32.3
90	0.000861	0.000948	695.4	632.0	807473	666919	873459	0.625	225.9	0.017	32.3
100	0.000867	0.000939	593.1	548.0	684012	583751	751417	0.601	194.3	0.017	32.4
200	0.000858	0.000942	518.3	472.4	603981	501687	652019	0.628	168.6	0.017	32.3
300	0.000840	0.000906	350.2	324.8	416713	358581	444562	0.622	115.0	0.017	32.4
400	0.000864	0.000888	431.5	419.9	499274	472825	561363	0.607	145.2	0.018	32.4
500	0.000843	0.000933	481.5	435.4	571016	466805	603202	0.617	156.0	0.017	32.3
600	0.000885	0.000983	530.1	477.1	599017	485201	662478	0.611	171.3	0.017	32.3
700	0.000825	0.000891	474.1	439.2	574360	492944	601465	0.586	155.5	0.017	32.4
800	0.000888	0.000894	436.3	433.4	491324	484794	573567	0.604	148.3	0.017	32.4
900	0.000811	0.000888	378.1	345.1	466447	388602	475941	0.585	123.1	0.017	32.3
1000	0.000828	0.000906	412.3	377.0	497681	416189	519524	0.581	134.4	0.017	32.3
2000	0.000855	0.000918	500.1	466.0	584717	507700	636326	0.560	164.6	0.017	32.4
3000	0.000834	0.000924	508.3	459.1	609159	496957	636326	0.544	164.6	0.017	32.4
4000	0.000864	0.000980	483.8	426.5	559874	435006	597976	0.566	154.6	0.017	32.3
5000	0.000876	0.000909	387.8	373.8	442611	411266	502087	0.584	129.8	0.017	32.4
6000	0.000840	0.000939	302.2	270.5	359609	288211	376570	0.559	97.4	0.017	32.4
7000	0.000882	0.000879	292.9	293.9	332091	334345	387030	0.586	100.1	0.017	32.4
8000	0.000864	0.000948	329.8	300.7	381576	317342	414920	0.548	107.3	0.017	32.4
9000	0.000906	0.000942	455.6	438.3	502880	465406	589260	0.570	152.4	0.017	32.3
10000	0.000924	0.000942	425.7	417.6	460834	443500	556137	0.575	143.8	0.017	32.3
20000	0.000894	0.001007	513.0	455.3	573816	452043	636326	0.522	164.6	0.016	32.3
30000	0.000837	0.000945	272.8	241.8	325830	256025	338214	0.501	87.5	0.016	32.3
40000	0.000900	0.000998	351.3	316.7	390326	317211	439329	0.514	113.6	0.018	32.3
50000	0.000924	0.000998	400.1	370.3	433144	370903	507320	0.515	131.2	0.016	32.3
60000	0.000858	0.000948	258.6	234.2	301374	247193	324265	0.498	83.9	0.016	32.3
70000	0.000894	0.000977	269.8	246.7	301753	252433	339958	0.496	87.9	0.016	32.3
80000	0.000921	0.001010	396.4	361.3	430455	357637	498605	0.493	128.9	0.016	32.3
90000	0.000942	0.001016	416.3	385.8	442114	379666	528240	0.493	136.6	0.016	32.3
100000	0.000879	0.000998	295.0	259.7	335538	260197	364366	0.474	94.2	0.016	32.3
148140	0.000915	0.001040	306.4	269.6	334952	259190	378308	0.470	97.8	0.016	32.3
200000	0.000954	0.001055	380.0	343.5	398497	325623	475941	0.479	123.1	0.016	32.3
248380	0.000930	0.001013	200.2	183.8	215379	181366	252791	0.484	65.4	0.016	32.3
300000	0.000951	0.001040	228.3	208.7	240201	200686	287653	0.479	74.4	0.016	32.2
355560	0.000927	0.001028	184.0	165.9	198542	161336	230128	0.455	59.5	0.016	32.4
400000	0.000921	0.001034	167.0	148.7	181318	143775	207464	0.451	53.7	0.016	32.3
411100	0.000948	0.001079	291.1	255.7	307200	237064	359133	0.446	92.9	0.016	32.3

Filename : RI2250
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 5.055 Beam depth (cm) : 5.037 Bulk density (KN/m^3) : 23.41 Deflection (mm) : 0.9296

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.001693	0.001952	1634.8	1417.7	965852	726319	1002533	3.096	511.3	0.017	32.3
10	0.001725	0.001940	998.5	888.1	578711	457780	620626	2.755	316.5	0.017	32.3
20	0.001749	0.002011	1263.9	1099.1	722527	546415	776239	2.663	395.9	0.017	32.3
30	0.001755	0.002029	1289.2	1115.1	734524	549463	789478	2.628	402.6	0.017	32.3
40	0.001755	0.001997	1110.6	976.3	632754	489007	686046	2.591	349.9	0.017	32.3
50	0.001746	0.002011	1070.5	929.4	613034	462034	656873	2.570	335.0	0.017	32.3
60	0.001740	0.001991	957.4	837.0	550152	420485	589681	2.547	300.7	0.017	32.3
70	0.001728	0.001976	822.2	719.3	475714	364063	506583	2.552	258.3	0.017	32.3
80	0.001740	0.001994	886.4	773.8	509313	388113	545477	2.524	278.2	0.017	32.3
90	0.001773	0.002026	1060.2	927.7	597996	457842	653336	2.524	333.2	0.017	32.3
100	0.001740	0.001994	821.7	717.3	472170	359809	505693	2.498	257.9	0.017	32.3
200	0.001767	0.002020	792.2	692.8	448285	342930	488014	2.424	248.9	0.018	32.3
300	0.001749	0.001991	677.1	595.0	387085	298898	418168	2.271	213.3	0.018	32.3
400	0.001782	0.002047	884.8	770.2	496537	376219	543712	2.223	277.3	0.018	32.3
500	0.001776	0.002020	774.3	680.6	435964	336883	478285	2.199	243.9	0.018	32.4
600	0.001788	0.002035	830.4	729.5	464440	358416	512767	2.183	261.5	0.018	32.4
700	0.001809	0.002050	898.5	792.7	496730	386651	556089	2.172	283.6	0.018	32.4
800	0.001779	0.002032	731.6	640.4	411211	315102	450885	2.140	229.9	0.018	32.4
900	0.001764	0.002000	647.1	570.9	366807	285515	400489	2.125	204.2	0.018	32.4
1000	0.001800	0.002044	782.2	688.7	434592	336903	483595	2.100	246.6	0.018	32.4
1059	0.001773	0.002011	684.5	603.4	386086	299988	423477	2.096	216.0	0.018	32.4
2000	0.001794	0.002047	649.4	569.1	362022	277979	400489	1.973	204.2	0.018	32.5
3000	0.001779	0.002032	612.5	536.2	344288	263816	377501	1.896	192.5	0.018	32.4
3564	0.001764	0.001994	427.9	378.6	242532	189916	265223	1.879	135.3	0.018	32.4
4000	0.001809	0.002071	650.6	568.2	359671	274359	400489	1.861	204.2	0.018	32.5
5000	0.001883	0.002086	808.6	730.0	429338	349976	506583	1.850	258.3	0.018	32.4
6000	0.001877	0.002047	509.5	467.2	271380	228218	321803	1.852	164.1	0.018	32.5

Filename : RI3240
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 5.052 Beam depth (cm) : 5.042

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)
1	0.001636	0.001410	744.2	863.8
11	0.001699	0.001451	704.2	824.2
23	0.001731	0.001478	754.7	884.1
30	0.001672	0.001413	513.1	607.3
40	0.001728	0.001457	637.0	755.6
50	0.001728	0.001460	603.1	713.8
60	0.001734	0.001466	594.6	703.4
70	0.001731	0.001457	514.6	611.5
80	0.001740	0.001472	567.7	671.1
90	0.001737	0.001478	551.8	648.6
100	0.001708	0.001436	446.8	531.2
200	0.001782	0.001487	518.8	621.7
300	0.001797	0.001514	542.0	643.3
400	0.001824	0.001556	597.1	700.0
500	0.001755	0.001457	332.8	400.9
600	0.001836	0.001544	491.1	584.0
700	0.001770	0.001445	285.4	349.5
800	0.001857	0.001547	518.4	622.2
900	0.001830	0.001529	400.0	478.8
1000	0.001833	0.001544	442.2	525.0
1059	0.001836	0.001523	373.0	449.7
2000	0.001901	0.001567	459.8	557.7
2796	0.001877	0.001544	319.2	388.2
3000	0.001898	0.001591	412.9	492.6
4000	0.001865	0.001556	309.0	370.5
5000	0.001862	0.001532	220.5	268.1
6000	0.001860	0.001532	218.2	264.9
7000	0.001910	0.001573	235.3	285.7
8000	0.001925	0.001624	335.2	397.4
9000	0.001922	0.001612	302.4	360.5
10000	0.001904	0.001559	205.5	251.0
12172	0.001895	0.001567	195.4	236.3
20000	0.001955	0.001672	260.5	304.6
30000	0.001967	0.001693	236.3	274.6
40000	0.001976	0.001743	230.3	261.0
45844	0.001976	0.001740	197.4	224.1
50000	0.001946	0.001702	119.0	136.1
54420	0.002020	0.001776	242.4	275.8

Bulk density (KN/m^3) : 23.30 Deflection (mm) : 0.7518

Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
454911	612841	652060	2.533	269.6	0.018	32.3
414562	567914	619350	2.240	256.1	0.018	32.3
435916	598121	664057	2.214	274.6	0.018	32.3
306924	429931	453608	2.188	187.6	0.018	32.3
368579	518525	563735	2.166	233.1	0.018	32.3
348942	488897	533204	2.180	220.5	0.018	32.3
342868	479775	525571	2.172	217.3	0.018	32.3
297250	419623	455787	2.150	188.5	0.018	32.3
326189	455870	501584	2.138	207.4	0.018	32.3
317639	438846	486318	2.128	201.1	0.018	32.3
261679	369813	395814	2.147	163.7	0.018	32.3
291114	418085	461241	2.110	190.7	0.018	32.3
301615	424966	479775	2.087	198.4	0.018	32.3
327395	450023	525571	2.069	217.3	0.018	32.3
189619	275097	296588	2.061	122.6	0.018	32.3
267512	378308	435068	2.043	179.9	0.019	32.3
161226	241835	256246	2.031	106.0	0.019	32.3
279220	402337	461241	2.030	190.7	0.019	32.3
218634	313205	355472	2.007	147.0	0.019	32.3
241263	340082	391457	1.995	161.9	0.019	32.4
203230	295327	332573	2.002	137.5	0.019	32.4
241863	355830	411080	1.949	170.0	0.019	32.4
170010	251481	285687	1.911	118.1	0.019	32.4
217537	309551	366373	1.904	151.5	0.019	32.4
165618	238188	274780	1.855	113.6	0.019	32.4
118401	175064	197362	1.844	81.6	0.019	32.4
117367	172975	195184	1.827	80.7	0.019	32.4
123193	181559	210449	1.837	87.0	0.019	32.4
174154	244683	296588	1.796	122.6	0.019	32.4
157330	223639	268236	1.790	110.9	0.019	32.4
107900	161067	184276	1.771	76.2	0.019	32.4
103115	150752	174464	1.737	72.1	0.019	32.4
133239	182180	228983	1.686	94.7	0.019	32.3
120166	162246	207174	1.614	85.7	0.019	32.4
116560	149718	199541	1.589	82.5	0.019	32.3
99922	128785	171196	1.576	70.8	0.019	32.3
61178	80010	103590	1.570	42.8	0.019	32.3
120001	155296	210449	1.549	87.0	0.019	32.3

Filename : RI4235
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 5.171 Beam depth (cm) : 5.032 Bulk density (KN/m^3) : 23.29 Deflection (mm) : 0.6528

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.001457	0.001463	1018.5	1014.3	698946	693223	956612	1.940	349.4	0.018	32.3
10	0.001487	0.001442	742.8	765.8	499515	530956	709771	1.775	259.2	0.018	32.3
20	0.001487	0.001430	618.8	643.3	416155	449754	593715	1.777	216.9	0.018	32.3
30	0.001466	0.001427	587.5	603.5	400751	422795	560384	1.782	204.7	0.018	32.3
40	0.001478	0.001413	524.5	548.8	354865	388568	504838	1.784	184.4	0.018	32.3
50	0.001526	0.001457	670.5	702.0	439467	481774	645551	1.773	235.8	0.018	32.3
60	0.001514	0.001454	596.5	621.0	394077	427035	572726	1.764	209.2	0.018	32.3
70	0.001532	0.001475	639.8	664.3	417685	450368	613462	1.755	224.1	0.018	32.3
80	0.001499	0.001433	527.2	551.3	351748	384658	507307	1.758	185.3	0.018	32.3
90	0.001511	0.001445	556.8	582.1	368565	402758	535700	1.730	195.7	0.018	32.3
100	0.001517	0.001445	540.4	567.1	356278	392415	520890	1.726	190.3	0.018	32.3
200	0.001532	0.001469	552.4	575.9	360664	392043	530763	1.706	193.9	0.018	32.3
300	0.001556	0.001478	516.6	543.7	332139	367869	498667	1.691	182.1	0.018	32.3
400	0.001565	0.001502	564.2	587.7	360650	391333	541871	1.663	197.9	0.018	32.3
500	0.001559	0.001463	466.6	497.0	299381	339682	453002	1.646	165.5	0.018	32.3
600	0.001585	0.001487	465.1	495.9	293389	333477	451767	1.637	165.0	0.018	32.3
700	0.001565	0.001466	417.9	445.9	267133	304166	406095	1.616	148.3	0.018	32.3
800	0.001579	0.001496	489.0	516.3	309641	345143	472749	1.594	172.7	0.018	32.3
900	0.001538	0.001454	357.3	377.7	232341	259762	345612	1.585	126.2	0.018	32.3
1000	0.001606	0.001514	529.9	562.2	329905	371399	513478	1.576	187.6	0.018	32.3
2000	0.001612	0.001511	443.3	473.1	274993	313109	430779	1.530	157.4	0.018	32.3
3000	0.001627	0.001535	432.0	458.0	265499	298422	418437	1.514	152.8	0.018	32.3
4000	0.001612	0.001499	299.9	322.6	186027	215200	292534	1.498	106.9	0.018	32.3
5000	0.001696	0.001565	469.0	508.3	276607	324913	459173	1.472	167.7	0.018	32.3
6000	0.001716	0.001576	474.3	516.4	276303	327581	465344	1.470	170.0	0.018	32.3
7000	0.001675	0.001526	274.4	301.2	163873	197438	270318	1.468	98.7	0.018	32.3
8000	0.001761	0.001594	497.2	549.3	282343	344543	491262	1.469	179.4	0.018	32.3
9000	0.001702	0.001541	261.1	288.4	153476	187206	257976	1.455	94.2	0.018	32.3
10000	0.001749	0.001573	355.0	394.7	202941	250833	351783	1.456	128.5	0.018	32.3
20000	0.001848	0.001624	357.3	406.5	193405	250295	357954	1.434	130.7	0.018	32.4
30000	0.001892	0.001645	329.7	379.3	174257	230596	332036	1.421	121.3	0.018	32.3
40000	0.001943	0.001678	329.9	382.1	169817	227749	333270	1.418	121.7	0.018	32.2
43569	0.001922	0.001645	267.7	312.8	139293	190178	271553	1.402	99.2	0.018	32.3
45030	0.001940	0.001666	316.9	369.0	163349	221543	320928	1.396	117.2	0.017	32.3
47170	0.001970	0.001681	362.1	424.4	183855	252536	367828	1.391	134.4	0.018	32.3

Filename : RI5230
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 5.067 Beam depth (cm) : 5.093 Bulk density (KN/m^3) : 23.22 Deflection (mm) : 0.5563

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.001123	0.001159	803.1	778.3	714805	671408	862633	1.019	272.8	0.017	32.3
11	0.001103	0.001132	561.5	546.7	509244	482795	604547	0.914	191.2	0.017	32.3
23	0.001094	0.001123	460.9	448.7	421429	399365	496185	0.908	156.9	0.017	32.3
30	0.001106	0.001126	447.1	438.8	404426	389581	483353	0.911	152.8	0.017	32.3
40	0.001123	0.001126	426.5	425.4	379652	377646	464820	0.866	147.0	0.017	32.3
50	0.001052	0.001144	538.8	495.3	512174	432820	563197	0.856	178.1	0.017	32.3
60	0.001103	0.001147	589.2	566.3	534404	493572	630210	0.853	199.3	0.017	32.3
70	0.001049	0.001135	521.0	481.4	496730	423987	546091	0.847	172.7	0.017	32.3
80	0.001052	0.001168	617.7	556.2	587199	476176	638767	0.840	202.0	0.017	32.3
90	0.001043	0.001165	564.3	505.1	541058	433537	581738	0.836	183.9	0.017	32.3
100	0.001022	0.001144	494.3	441.5	483636	385872	509016	0.829	161.0	0.017	32.3
200	0.001028	0.001168	576.4	507.3	560639	434261	588861	0.813	186.2	0.017	32.3
300	0.001019	0.001162	532.7	467.2	522744	401985	543236	0.784	171.8	0.017	32.3
400	0.001037	0.001165	511.9	455.6	493648	391036	526130	0.787	166.4	0.017	32.3
500	0.000983	0.001097	323.3	290.0	328809	264409	333642	0.774	105.5	0.017	32.3
600	0.000989	0.001112	316.3	281.5	319707	253288	325085	0.771	102.8	0.018	32.3
700	0.001028	0.001159	412.8	366.1	401530	315832	423470	0.770	133.9	0.018	32.3
800	0.001010	0.001123	306.3	275.4	303228	245179	316529	0.768	100.1	0.018	32.3
900	0.001052	0.001171	473.5	425.4	450181	363201	489055	0.771	154.6	0.018	32.3
1000	0.001031	0.001153	375.1	335.3	363766	290776	386396	0.763	122.2	0.018	32.3
2000	0.001043	0.001195	445.8	389.1	427400	325596	453408	0.736	143.4	0.018	32.3
3000	0.001022	0.001159	330.4	291.3	323279	251343	337917	0.719	106.9	0.018	32.3
4000	0.001037	0.001189	399.7	348.6	385396	293175	406357	0.709	128.5	0.018	32.3
5000	0.001016	0.001174	319.6	276.6	314564	235623	323658	0.691	102.3	0.018	32.3
6000	0.001046	0.001183	387.0	342.2	370027	289245	396380	0.689	125.3	0.018	32.3
7000	0.001037	0.001210	406.2	348.2	391739	287811	409211	0.677	129.4	0.018	32.3
8000	0.001061	0.001201	438.7	387.6	413576	322734	449133	0.670	142.0	0.018	32.3
9000	0.001052	0.001177	323.9	289.5	307944	245938	333642	0.665	105.5	0.018	32.3
10000	0.001055	0.001183	339.6	302.8	321886	255936	349328	0.663	110.5	0.018	32.3
20000	0.001031	0.001198	391.2	336.7	379432	281082	394952	0.627	124.9	0.017	32.3
30000	0.000939	0.001147	184.4	150.8	196418	131488	181076	0.577	57.3	0.017	32.3
40000	0.001031	0.001165	274.1	242.6	265878	208201	280889	0.592	88.8	0.017	32.3
50000	0.001049	0.001198	370.8	324.7	353534	271063	377839	0.559	119.5	0.017	32.3
60000	0.001025	0.001198	351.3	300.7	342750	250978	353603	0.569	111.8	0.017	32.3
70000	0.001100	0.001201	340.3	311.6	309503	259486	355030	0.559	112.3	0.017	32.2
80000	0.001034	0.001153	214.2	192.1	207146	166535	221005	0.558	69.9	0.017	32.4
90000	0.001022	0.001183	297.4	256.9	290955	217186	300850	0.548	95.1	0.017	32.3
100000	0.000957	0.001180	287.5	233.0	300525	197466	280889	0.526	88.8	0.017	32.4
200000	0.001010	0.001189	334.2	284.0	330850	238829	335069	0.510	106.0	0.017	32.2
300000	0.000995	0.001174	287.6	243.8	288997	207677	288018	0.501	91.1	0.016	32.2
338390	0.000989	0.001186	267.2	222.9	270063	187916	265202	0.491	83.9	0.017	32.3

Filename : RI6255
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 5.057 Beam depth (cm) : 5.057 Bulk density (KN/m^3) : 23.45 Deflection (mm) : 1.0211

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.002357	0.001904	1273.3	1576.2	540203	827745	843327	4.389	478.4	0.018	32.3
13	0.002405	0.001895	891.5	1131.1	370696	596831	596928	3.829	338.6	0.018	32.3
20	0.002432	0.001910	864.1	1100.0	355361	575877	579442	3.741	328.7	0.018	32.3
30	0.002435	0.001871	646.9	841.6	265726	449740	437964	3.683	248.4	0.019	32.3
40	0.002417	0.001827	489.6	647.7	202568	354568	333835	3.694	189.4	0.019	32.3
50	0.002494	0.001940	892.2	1147.1	357713	591322	600906	3.608	340.9	0.018	32.3
60	0.002470	0.001898	626.9	815.8	253764	429793	424449	3.602	240.8	0.019	32.3
70	0.002536	0.001961	859.3	1111.3	338855	566790	580242	3.563	329.1	0.019	32.3
80	0.002470	0.001874	510.2	672.4	206533	358754	347349	3.578	197.0	0.019	32.3
90	0.002521	0.001898	599.3	796.0	237719	419306	409349	3.517	232.2	0.019	32.3
100	0.002482	0.001919	660.3	854.2	266023	445072	445907	3.508	252.9	0.019	32.3
200	0.002366	0.001785	301.6	399.8	127489	224005	205864	3.400	116.8	0.019	32.3
300	0.002366	0.001782	285.1	378.6	120511	212456	194735	3.360	110.5	0.019	32.4
400	0.002485	0.001928	574.1	740.0	231003	383831	387092	3.251	219.6	0.018	32.4
500	0.002515	0.001949	628.0	810.4	249696	415858	423656	3.207	240.3	0.019	32.4
600	0.002497	0.001940	598.0	769.8	239484	396828	402985	3.170	228.6	0.019	32.4
700	0.002438	0.001886	360.3	465.6	147822	246855	243221	3.140	138.0	0.018	32.4
800	0.002533	0.001979	685.8	877.9	270753	443686	461013	3.120	261.5	0.018	32.4
900	0.002515	0.001964	480.0	614.7	190833	313019	322707	3.142	183.1	0.018	32.4
1000	0.002497	0.001928	441.1	571.4	176657	296354	298071	3.105	169.1	0.018	32.4
1059	0.002545	0.001976	587.2	756.5	230762	382866	395835	3.121	224.5	0.018	32.4
2000	0.002533	0.001943	401.2	523.0	158385	269195	271835	2.998	154.2	0.018	32.3
3000	0.002503	0.001910	312.5	409.5	124841	214393	212221	2.901	120.4	0.018	32.4
4000	0.002488	0.001907	274.4	358.0	110279	187716	185993	2.840	105.5	0.018	32.3
5000	0.002456	0.001871	201.2	264.0	81940	141072	136714	2.784	77.6	0.018	32.4
6000	0.002354	0.001812	142.1	184.7	60381	101943	96178	2.705	54.6	0.018	32.3
7000	0.002456	0.001854	194.5	257.7	79230	139045	132743	2.683	75.3	0.018	32.4
8000	0.002298	0.001758	60.9	79.6	26522	45292	41332	2.611	23.4	0.018	32.4
9000	0.002563	0.001991	489.5	630.2	190998	316577	329864	2.583	187.1	0.018	32.4
10000	0.002408	0.001851	176.1	229.1	73142	123820	119228	2.549	67.6	0.018	32.3
14003	0.002494	0.001919	212.6	276.3	85243	143988	143864	2.465	81.6	0.018	32.3
14315	0.002497	0.001958	252.3	321.7	101019	164342	169300	2.456	96.0	0.018	32.3
15048	0.002593	0.002029	503.0	642.6	194012	316639	337814	2.431	191.6	0.018	32.3

Filename : RI7255
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 5.083 Beam depth (cm) : 5.032 Bulk density (KN/m^3) : 23.35 Deflection (mm) : 1.0338

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.002217	0.001997	1350.5	1499.7	609132	751141	844569	4.235	480.2	0.018	32.3
13	0.002220	0.002006	624.8	691.6	281440	344881	390181	3.775	221.8	0.019	32.3
20	0.002229	0.002009	548.0	608.1	245834	302773	342599	3.681	194.8	0.019	32.3
30	0.002351	0.002122	988.8	1095.8	420554	516436	617785	3.622	351.2	0.019	32.3
40	0.002286	0.002068	610.0	674.2	266905	326009	380666	3.583	216.4	0.019	32.3
50	0.002259	0.002044	502.1	554.8	222274	271380	313254	3.540	178.1	0.019	32.3
60	0.002286	0.002035	495.7	556.7	216882	273511	311668	3.555	177.2	0.019	32.3
70	0.002345	0.002080	572.8	645.9	244255	310516	360836	3.529	205.1	0.019	32.3
80	0.002324	0.002071	531.2	596.1	228528	287846	333877	3.496	189.8	0.019	32.3
90	0.002283	0.002032	469.2	527.0	205547	259300	295016	3.511	167.7	0.019	32.3
100	0.002304	0.002035	475.0	537.6	206229	264161	299774	3.492	170.4	0.019	32.3
200	0.002411	0.002169	862.0	957.9	357554	441549	539272	3.350	306.6	0.019	32.3
300	0.002396	0.002160	700.4	776.7	292341	359526	437764	3.293	248.9	0.019	32.3
400	0.002405	0.002178	690.5	762.2	287122	349928	430627	3.236	244.8	0.019	32.3
500	0.002417	0.002163	655.0	731.7	271029	338214	410797	3.190	233.5	0.019	32.3
600	0.002372	0.002137	460.4	511.1	194080	239201	287880	3.141	163.7	0.019	32.3
700	0.002414	0.002190	640.1	705.4	265209	322093	398903	3.117	226.8	0.019	32.3
800	0.002420	0.002178	593.4	659.1	245221	302573	371144	3.080	211.0	0.019	32.3
900	0.002447	0.002232	705.6	773.4	288404	346515	438556	3.046	249.3	0.019	32.3
1000	0.002375	0.002143	418.8	464.2	176340	216675	261707	3.054	148.8	0.019	32.3
1059	0.002414	0.002205	623.1	682.0	258128	309275	387009	3.032	220.0	0.019	32.3
2000	0.002366	0.002098	312.2	352.1	131943	167831	196673	2.904	111.8	0.019	32.3
3000	0.002354	0.002107	308.5	344.7	131046	163618	193501	2.804	110.0	0.019	32.3
4000	0.002348	0.002110	314.1	349.6	133777	165721	196673	2.746	111.8	0.019	32.3
5000	0.002223	0.001988	82.1	91.9	36952	46223	51548	2.703	29.3	0.019	32.3
6000	0.002390	0.002128	287.6	323.0	120325	151807	180814	2.647	102.8	0.019	32.3
7000	0.002464	0.002205	484.2	541.1	196480	245393	303739	2.623	172.7	0.018	32.3
8000	0.002467	0.002196	483.0	542.6	195756	247082	303739	2.594	172.7	0.019	32.3
9000	0.002453	0.002208	441.2	490.1	179918	221943	275979	2.556	156.9	0.019	32.3

Filename : RA4350
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 4.879 Beam depth (cm) : 4.928 Bulk density (KN/m^3) : 23.09 Deflection (mm) : 0..3861

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000691	0.000780	1499.1	1328.7	2168409	1703479	2289209	0.667	438.2	0.010	22.9
13	0.000688	0.000764	1381.8	1243.1	2009548	1626324	2126694	0.635	407.1	0.010	22.9
20	0.000706	0.000767	1354.0	1246.3	1917224	1624117	2109043	0.634	403.7	0.011	22.9
30	0.000698	0.000758	1305.7	1203.0	1870545	1587850	2034852	0.636	389.5	0.011	22.9
40	0.000698	0.000769	1304.3	1184.2	1868545	1540343	2017201	0.637	386.2	0.011	22.9
50	0.000699	0.000754	1256.5	1164.6	1798009	1544687	1964179	0.633	376.0	0.011	22.9
60	0.000704	0.000770	1310.5	1198.9	1861581	1557925	2034852	0.635	389.5	0.011	22.9
70	0.000687	0.000766	1308.1	1173.3	1904468	1532000	2010099	0.630	384.8	0.011	22.9
80	0.000698	0.000758	1254.2	1154.4	1796768	1522209	1953629	0.625	374.0	0.011	22.9
90	0.000703	0.000759	1281.6	1187.3	1822417	1564062	2003066	0.632	383.5	0.011	22.9
100	0.000700	0.000770	1246.4	1133.1	1779806	1470910	1928876	0.633	369.3	0.011	22.9
200	0.000707	0.000781	1295.4	1171.9	1832208	1499525	1999550	0.629	382.8	0.011	22.9
300	0.000714	0.000781	1224.6	1119.4	1715821	1433815	1900607	0.630	363.8	0.011	22.9
400	0.000727	0.000793	1233.7	1131.7	1696791	1427748	1918258	0.633	367.2	0.011	22.9
500	0.000717	0.000799	1217.5	1093.7	1696997	1369416	1872337	0.634	358.4	0.011	22.9
600	0.000734	0.000803	1188.4	1085.9	1619567	1352178	1844068	0.633	353.0	0.011	22.9
700	0.000732	0.000813	1202.4	1082.3	1643630	1331631	1851170	0.635	354.4	0.011	22.9
800	0.000731	0.000814	1222.0	1097.8	1672106	1349489	1879439	0.637	359.8	0.011	22.9
900	0.000726	0.000817	1199.0	1065.6	1652387	1305017	1833518	0.636	351.0	0.011	22.9
1000	0.000738	0.000813	1189.8	1080.8	1611637	1329701	1840551	0.640	352.3	0.011	22.9
2000	0.000745	0.000851	1150.2	1007.2	1543997	1183872	1745193	0.637	334.1	0.012	22.8
3000	0.000752	0.000848	1098.1	974.6	1459396	1149603	1678036	0.637	321.2	0.012	22.8
4000	0.000767	0.000860	1095.4	976.7	1428920	1136158	1678036	0.637	321.2	0.012	22.9
5000	0.000755	0.000867	1090.9	949.4	1445606	1094857	1649767	0.636	315.8	0.012	22.9
6000	0.000773	0.000887	1073.8	935.8	1390032	1055556	1625083	0.632	311.1	0.012	23.0
7000	0.000778	0.000892	1052.3	917.9	1353075	1029286	1593228	0.627	305.0	0.012	23.1
8000	0.000771	0.000895	1026.3	884.4	1330942	988467	1543791	0.621	295.5	0.012	23.1
9000	0.000768	0.000895	1016.6	872.7	1323564	975436	1526139	0.617	292.2	0.012	23.2
10000	0.000790	0.000916	1038.0	894.6	1314463	976194	1561442	0.614	298.9	0.012	23.3
40000	0.000839	0.000962	973.0	848.6	1159946	882353	1473117	0.625	282.0	0.012	22.4
50000	0.000843	0.000975	963.4	833.1	1142364	854359	1451949	0.624	278.0	0.012	22.5
60000	0.000854	0.000992	953.9	821.3	1116301	827745	1434298	0.629	274.6	0.012	22.4
70000	0.000854	0.000977	843.6	737.5	987295	754589	1278816	0.636	244.8	0.013	22.3
80000	0.000876	0.000998	911.7	800.1	1040593	801475	1384861	0.652	265.1	0.013	21.8
103520	0.000869	0.001035	928.5	780.1	1068036	753899	1377759	0.646	263.8	0.013	22.1
165620	0.000873	0.001036	793.7	669.2	909037	646234	1179941	0.640	225.9	0.013	21.8
200000	0.000883	0.001055	830.3	694.9	940547	658700	1229379	0.644	235.4	0.013	21.6
210610	0.000894	0.001068	834.8	699.1	933790	654818	1236480	0.641	236.7	0.013	21.7
224110	0.000887	0.001070	800.8	664.2	902556	620860	1179941	0.627	225.9	0.013	22.1
235780	0.000899	0.001077	810.0	676.1	900763	627617	1197593	0.626	229.3	0.013	22.1
248290	0.000895	0.001081	861.3	713.5	961853	660072	1268266	0.633	242.8	0.013	21.7
256250	0.000907	0.001088	882.2	735.5	972264	675758	1303569	0.654	249.6	0.013	21.4
265120	0.000900	0.001064	816.0	690.3	906693	648847	1215244	0.648	232.8	0.013	21.5
275000	0.000913	0.001098	876.1	728.7	959301	663658	1292950	0.648	247.5	0.013	21.6

Filename : RF3375
Material : Asphalt Rubber Hot Mix, California

Beam width (cm) : 4.890 Beam depth (cm) : 4.902 Bulk density (KN/m^3) : 23.06 Deflection (mm) : 0.5717

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.001273	0.001020	2231.2	2783.8	1752709	2728352	2733247	1.932	764.2	0.009	20.7
13	0.001273	0.001014	1984.2	2490.1	1558615	2454827	2436969	1.807	681.4	0.009	20.7
20	0.001269	0.001018	1973.3	2460.8	1554409	2417456	2416766	1.791	675.7	0.009	20.7
30	0.001272	0.001013	1882.2	2362.7	1479943	2331958	2311962	1.786	646.4	0.009	20.7
40	*0.001269*	*0.001012*	*1817.1*	*2279.4*	*1431402*	*2252459*	*2231360*	*1.782*	*623.9*	*0.010*	*20.7*
50	0.001269	0.001007	1765.8	2225.6	1390997	2209641	2172890	1.785	607.5	0.010	20.7
60	0.001274	0.001016	1751.3	2197.3	1374380	2163651	2150688	1.783	601.3	0.010	20.7
70	0.001283	0.001022	1780.3	2235.2	1388101	2188128	2187025	1.783	611.5	0.010	20.7
80	0.001278	0.001020	1754.4	2197.1	1373001	2153309	2152757	1.784	601.9	0.010	20.7
90	0.001287	0.001014	1745.7	2215.5	1356109	2184129	2154756	1.786	602.5	0.010	20.7
100	0.001287	0.001033	1752.0	2182.4	1360935	2111801	2144690	1.782	599.6	0.010	20.7
200	0.001295	0.001041	1725.0	2145.9	1332597	2062226	2110422	1.770	590.1	0.010	20.7
300	0.001300	0.001045	1687.1	2098.8	1297363	2007755	2064018	1.765	577.1	0.010	20.7
400	0.001306	0.001056	1625.3	2010.5	1244134	1903778	1983416	1.765	554.6	0.010	20.8
500	0.001318	0.001063	1631.8	2023.3	1237859	1903020	1993482	1.753	557.4	0.010	20.7
600	0.001312	0.001054	1597.3	1989.4	1217105	1887989	1955215	1.745	546.7	0.010	20.7
700	*0.001318*	*0.001059*	*1562.7*	*1946.3*	*1185388*	*1838828*	*1912880*	*1.725*	*534.8*	*0.010*	*20.7*
800	0.001311	0.001067	1567.0	1926.0	1195179	1805387	1906812	1.723	533.2	0.010	20.7
900	0.001312	0.001066	1542.5	1899.6	1175322	1782633	1878612	1.720	525.2	0.010	20.7
1000	0.001323	0.001085	1567.4	1911.9	1184699	1762638	1900745	1.716	531.5	0.010	20.7
2000	0.001336	0.001111	1470.4	1768.5	1100373	1591918	1771808	1.676	495.4	0.011	20.7
3000	0.001320	0.001116	1412.6	1670.7	1070518	1497387	1689137	1.633	472.3	0.011	20.7
4000	0.001322	0.001144	1393.9	1610.2	1054452	1407201	1648801	1.600	461.0	0.011	20.8
5000	0.001314	0.001144	1362.1	1563.6	1036939	1366451	1606466	1.557	449.2	0.011	20.9
6000	0.001298	0.001163	1318.0	1470.6	1015358	1264129	1533931	1.507	428.9	0.011	21.1
7000	0.001274	0.001186	1289.1	1385.0	1011703	1167806	1473462	1.443	412.0	0.011	21.4
8000	0.001258	0.001213	1294.0	1341.0	1029010	1105131	1453328	1.376	406.3	0.011	21.7
9000	0.001241	0.001210	1246.5	1278.4	1004533	1056659	1392859	1.311	389.4	0.011	22.0
10000	*0.001221*	*0.001212*	*1185.1*	*1193.3*	*970954*	*984399*	*1312187*	*1.259*	*366.9*	*0.011*	*22.4*
20000	0.001081	0.001242	1077.5	937.9	996672	755140	1106579	1.018	309.4	0.012	22.5
30000	0.001018	0.001302	1046.9	818.7	1028458	628989	1013910	0.885	283.5	0.012	23.1

Filename : RB1360
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 4.862 Beam depth (cm) : 4.882 Bulk density (KN/m^3) : 23.09 Deflection (mm) : 0.4572

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000793	0.000849	2140.9	1998.9	2700909	2354436	2863494	0.884	629.0	0.008	20.7
13	0.000804	0.000819	1900.7	1866.9	2363744	2280177	2608930	0.842	573.0	0.008	20.7
20	0.000806	0.000811	1824.3	1812.6	2262870	2233842	2518606	0.850	553.2	0.008	20.7
30	0.000811	0.000844	1832.0	1761.8	2257768	2088013	2487854	0.850	546.5	0.008	20.7
40	0.000820	0.000818	1774.7	1779.3	2164892	2175924	2461170	0.849	540.6	0.008	20.7
50	0.000818	0.000829	1801.4	1776.4	2203021	2142483	2477580	0.855	544.2	0.008	20.7
60	0.000827	0.000818	1766.9	1787.2	2136278	2185646	2461170	0.850	540.6	0.008	20.7
70	0.000821	0.000832	1765.5	1741.2	2150895	2092012	2428350	0.854	533.4	0.008	20.7
80	0.000823	0.000817	1717.1	1730.2	2086565	2118696	2387256	0.855	524.3	0.009	20.7
90	0.000831	0.000825	1709.8	1722.7	2056847	2088151	2376982	0.852	522.1	0.009	20.7
100	0.000823	0.000828	1718.6	1707.8	2088564	2062295	2372914	0.860	521.2	0.008	20.8
200	0.000827	0.000860	1693.3	1627.7	2047401	1891643	2299000	0.863	505.0	0.009	20.8
300	0.000846	0.000835	1615.8	1636.0	1910260	1958249	2251769	0.872	494.6	0.009	20.8
400	0.000853	0.000821	1558.6	1620.0	1826899	1973694	2200470	0.876	483.3	0.009	20.8
500	0.000845	0.000838	1593.7	1607.6	1886472	1919499	2216880	0.875	486.9	0.009	20.9
600	0.000855	0.000859	1562.9	1555.3	1827451	1809731	2159445	0.883	474.3	0.009	20.9
700	0.000865	0.000860	1540.5	1548.0	1781737	1799112	2138898	0.885	469.8	0.009	20.9
800	0.000867	0.000866	1533.0	1534.8	1768774	1772980	2124487	0.888	466.6	0.009	21.0
900	0.000878	0.000851	1529.2	1577.9	1741332	1854066	2151171	0.889	472.5	0.009	21.0
1000	0.000873	0.000845	1468.4	1517.3	1682035	1796010	2067052	0.886	454.0	0.009	21.0
2000	0.000906	0.000849	1417.9	1513.7	1564476	1782978	2028026	0.890	445.4	0.009	21.1
3000	0.000920	0.000871	1341.6	1417.1	1458361	1627220	1909019	0.889	419.3	0.010	21.1
4000	0.000924	0.000875	1298.5	1371.2	1405132	1566958	1847377	0.893	405.8	0.010	21.2
5000	0.000937	0.000854	1263.9	1385.8	1349420	1622256	1830967	0.891	402.2	0.010	21.2
6000	0.000955	0.000871	1263.5	1386.1	1322599	1591573	1830967	0.895	402.2	0.010	21.2
7000	0.000969	0.000880	1258.7	1385.4	1299018	1573853	1826899	0.897	401.3	0.010	21.2
8000	0.000972	0.000893	1253.9	1365.2	1289917	1529104	1810489	0.900	397.7	0.010	21.2
9000	0.000981	0.000893	1236.8	1359.6	1260199	1522899	1794010	0.908	394.1	0.010	21.2
10000	0.001007	0.000881	1196.7	1366.7	1188974	1550686	1767326	0.911	388.2	0.010	21.2
20000	0.001085	0.000913	1049.3	1247.2	967369	1366589	1578541	0.934	346.7	0.010	21.5
30000	0.001149	0.000964	1046.3	1247.9	910347	1294812	1576473	0.958	346.3	0.010	21.5
40000	0.001207	0.000958	944.0	1188.5	782307	1239997	1457396	0.975	320.1	0.010	21.5
50000	0.001259	0.000994	915.0	1158.9	726871	1165945	1416371	1.006	311.1	0.011	21.5
60000	0.001337	0.001022	894.3	1169.9	668849	1144570	1404029	1.044	308.4	0.011	21.4
70000	0.001410	0.001044	861.5	1163.6	610945	1114508	1371209	1.097	301.2	0.011	21.2
80000	0.001468	0.001045	808.2	1134.8	550738	1085894	1307568	1.120	287.2	0.011	21.2

Filename : RC3390
Material : Asphalt Rubber Hot Mix, California

Beam width (cm) : 4.872 Beam depth (cm) : 4.849 Bulk density (KN/m^3) : 23.13 Deflection (mm) : 0.6858

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.001298	0.001121	2189.7	2535.4	1686931	2261698	2184612	2.058	706.7	0.010	22.6
13	0.001321	0.001119	1865.0	2201.6	1411475	1967075	1877302	1.974	607.3	0.010	22.6
20	0.001332	0.001112	1698.0	2033.7	1274679	1828692	1720509	1.958	556.6	0.011	22.6
30	0.001341	0.001126	1671.6	1990.0	1246616	1766706	1689137	1.969	546.5	0.011	22.6
40	0.001348	0.001141	1677.2	1982.2	1244134	1737678	1689137	1.977	546.5	0.011	22.6
50	0.001348	0.001141	1666.9	1969.9	1236411	1726922	1678726	1.969	543.1	0.011	22.6
60	0.001364	0.001146	1661.4	1977.6	1217864	1725543	1678726	1.969	543.1	0.011	22.6
70	0.001364	0.001157	1680.9	1982.3	1232205	1713614	1691206	1.978	547.1	0.011	22.6
80	0.001371	0.001153	1660.0	1974.0	1210555	1711753	1676588	1.976	542.4	0.011	22.6
90	0.001364	0.001150	1622.3	1925.1	1189181	1674451	1636873	1.974	529.6	0.011	22.6
100	0.001380	0.001155	1617.1	1932.5	1171529	1673141	1636873	1.971	529.6	0.011	22.5
200	0.001402	0.001175	1578.9	1884.1	1126367	1603915	1597158	1.997	516.7	0.011	22.5
300	0.001414	0.001189	1506.7	1792.1	1065346	1507316	1521933	2.002	492.3	0.011	22.5
400	0.001438	0.001228	1580.5	1849.7	1099477	1505868	1584609	2.013	512.6	0.011	22.4
500	0.001441	0.001205	1439.1	1720.9	998603	1428023	1457120	2.030	471.4	0.012	22.4
600	0.001491	0.001268	1452.0	1708.0	973712	1347352	1459189	2.035	472.1	0.012	22.3
700	0.001497	0.001261	1472.8	1748.5	984123	1387136	1486355	2.053	480.8	0.012	22.2
800	0.001473	0.001250	1450.6	1710.0	984606	1368244	1459189	2.066	472.1	0.012	22.2
900	0.001514	0.001268	1462.4	1747.1	965645	1378173	1480081	2.073	478.8	0.012	22.2
1000	0.001514	0.001275	1399.9	1663.0	924413	1304534	1413199	2.092	457.2	0.012	22.2
2000	0.001570	0.001345	1371.4	1601.2	873597	1190904	1373484	2.117	444.3	0.012	22.0
3000	0.001584	0.001387	1385.7	1582.1	874769	1140295	1373484	2.107	444.3	0.012	21.8
4000	0.001604	0.001409	1345.4	1531.5	838915	1086997	1331700	2.107	430.8	0.013	21.7
5000	0.001586	0.001425	1257.3	1399.3	792787	981986	1231309	2.082	398.3	0.013	21.7
6000	0.001604	0.001421	1213.2	1368.8	756450	962956	1195800	2.096	386.8	0.013	21.6
7000	0.001649	0.001473	1266.9	1417.5	768517	962197	1243858	2.082	402.4	0.013	21.5
8000	0.001638	0.001472	1189.0	1323.3	725975	899315	1164428	2.077	376.7	0.013	21.5
9000	0.001681	0.001502	1256.2	1405.8	747418	935996	1233378	2.067	399.0	0.013	21.5
10000	0.001683	0.001511	1203.6	1340.3	715356	887180	1179045	2.076	381.4	0.013	21.4
13000	0.001738	0.001543	1118.6	1259.9	643676	816575	1101683	2.063	356.4	0.013	21.6
13371	0.001727	0.001539	1118.6	1255.0	647627	815196	1099615	2.057	355.7	0.013	21.6

Filename : RD23100
Material : Asphalt Rubber Hot Mix, California

Beam width (cm) : 4.905 Beam depth (cm) : 4.963 Bulk density (KN/m^3) : 22.97 Deflection (mm) : 0.7620

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.001457	0.001595	2873.4	2625.3	1971901	1646112	2242806	2.965	870.4	0.011	21.7
13	0.001489	0.001572	2333.2	2211.1	1566544	1406856	1855927	2.775	720.2	0.011	21.7
20	0.001498	0.001573	2231.2	2124.8	1489182	1350386	1779255	2.766	690.5	0.011	21.7
30	0.001507	0.001582	2161.0	2058.4	1433746	1300880	1723474	2.757	668.8	0.011	21.7
40	0.001523	0.001598	2199.7	2096.4	1444020	1311567	1754846	2.755	681.0	0.011	21.7
50	0.001538	0.001588	2082.1	2016.4	1354109	1270059	1674658	2.752	649.9	0.011	21.7
60	0.001543	0.001602	2048.8	1973.3	1327839	1231792	1643285	2.751	637.7	0.012	21.7
70	0.001541	0.001573	1921.5	1882.2	1246754	1196283	1554409	2.750	603.2	0.012	21.7
80	0.001548	0.001600	2002.9	1938.0	1293502	1211038	1610189	2.750	624.9	0.012	21.7
90	0.001556	0.001590	1948.3	1906.7	1252477	1199523	1575370	2.747	611.4	0.012	21.7
100	0.001556	0.001600	1952.8	1898.2	1255373	1186216	1573577	2.738	610.7	0.012	21.7
200	0.001579	0.001613	1844.6	1805.7	1168358	1119679	1491733	2.707	578.9	0.012	21.7
300	0.001602	0.001641	1819.2	1775.7	1135607	1081826	1469049	2.694	570.1	0.012	21.7
400	0.001620	0.001654	1809.6	1772.4	1117128	1071690	1463809	2.669	568.1	0.012	21.6
500	0.001631	0.001659	1752.8	1722.5	1074931	1038180	1420232	2.655	551.2	0.012	21.7
573	0.001632	0.001665	1703.0	1670.0	1043214	1003291	1378448	2.637	534.9	0.012	21.7
600	0.001643	0.001663	1717.9	1697.5	1045489	1020874	1395893	2.630	541.7	0.012	21.7
700	0.001640	0.001670	1697.7	1666.8	1035422	998120	1374932	2.613	533.6	0.012	21.7
800	0.001643	0.001659	1634.6	1618.7	994811	975643	1329632	2.588	516.0	0.012	21.7
900	0.001638	0.001666	1589.2	1561.9	970402	937375	1287848	2.565	499.8	0.012	21.7
1000	0.001629	0.001654	1521.0	1497.9	933790	905727	1233791	2.544	478.8	0.012	21.7
2000	0.001613	0.001656	1406.3	1369.9	872011	827400	1134434	2.315	440.3	0.012	21.6
3000	0.001547	0.001609	1200.6	1153.9	776308	717080	961921	2.044	373.3	0.013	21.6
3500	0.001468	0.001579	1172.6	1090.2	798786	690603	923585	1.798	358.4	0.013	21.6
4000	0.001507	0.001511	998.9	996.5	662747	659610	815541	1.650	316.5	0.013	21.6

Filename : RC4340
Material : Asphalt Rubber Hot Mix, California

Beam width (cm) : 4.844 | Beam depth (cm) : 4.849 | Bulk density (KN/m^3) : 23.02 | Deflection (mm) : 0.3073

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000652	0.000632	1007.1	1038.0	1544963	1641079	2120626	0.478	305.7	0.011	23.1
10	0.000662	0.000614	933.1	1005.6	1410510	1638183	2008031	0.465	289.5	0.011	23.1
20	0.000665	0.000598	904.2	1005.6	1359142	1680863	1975211	0.466	284.7	0.011	23.1
30	0.000670	0.000609	927.2	1020.1	1382792	1673968	2015064	0.465	290.5	0.011	23.1
40	0.000664	0.000610	884.4	962.1	1332390	1576955	1911846	0.464	275.6	0.011	23.1
50	0.000664	0.000607	894.3	977.6	1347214	1610189	1937702	0.464	279.3	0.011	23.1
60	0.000667	0.000610	891.2	973.8	1336596	1596193	1930669	0.465	278.3	0.011	23.1
70	0.000665	0.000618	886.4	952.5	1333838	1540550	1904813	0.463	274.6	0.011	23.1
80	0.000677	0.000612	880.8	974.0	1300604	1590539	1918947	0.465	276.6	0.011	23.1
90	0.000676	0.000617	909.7	996.4	1346180	1615361	1972866	0.468	284.4	0.011	23.1
100	0.000673	0.000615	881.9	965.2	1309498	1568475	1911846	0.466	275.6	0.011	23.1
200	0.000676	0.000634	914.6	975.9	1352110	1539309	1958801	0.469	282.4	0.011	23.0
300	0.000668	0.000608	849.2	932.4	1272196	1533862	1843861	0.472	265.8	0.011	22.9
400	0.000682	0.000613	857.7	954.6	1256890	1556960	1874337	0.466	270.2	0.011	22.8
500	0.000680	0.000624	911.5	994.3	1340043	1594469	1972866	0.473	284.4	0.011	22.8
600	0.000696	0.000619	894.4	1005.2	1285297	1623704	1963489	0.471	283.0	0.011	22.7
700	0.000685	0.000634	912.1	986.1	1330804	1555374	1965833	0.471	283.4	0.011	22.6
800	0.000689	0.000625	899.3	991.5	1305017	1586264	1956456	0.472	282.0	0.011	22.6
900	0.000685	0.000619	887.2	981.2	1295915	1584885	1933013	0.477	278.6	0.011	22.5
1000	0.000679	0.000618	884.5	972.0	1303224	1573853	1921292	0.475	276.9	0.011	22.4
2000	0.000703	0.000656	978.9	1050.1	1391963	1601777	2101872	0.484	303.0	0.010	22.0
3000	0.000713	0.000668	989.7	1057.1	1388170	1583644	2120626	0.502	305.7	0.010	21.6
4000	0.000720	0.000685	994.7	1046.7	1380793	1528828	2115938	0.503	305.0	0.010	21.4
5000	0.000725	0.000683	985.2	1045.4	1359142	1530207	2104216	0.509	303.3	0.010	21.2
6000	0.000723	0.000681	994.9	1056.0	1376863	1550754	2125384	0.516	306.4	0.010	21.1
7000	0.000732	0.000697	1013.9	1065.9	1384516	1530276	2155860	0.514	310.8	0.010	21.1
8000	0.000740	0.000685	1006.0	1087.0	1359832	1587643	2167581	0.520	312.4	0.010	21.0
9000	0.000735	0.000693	998.3	1059.4	1357626	1529173	2132417	0.516	307.4	0.010	21.0
10000	0.000729	0.000700	970.9	1011.2	1331218	1443951	2054986	0.521	296.2	0.010	21.0
20000	0.000765	0.000707	944.3	1021.9	1234205	1445468	2036231	0.519	293.5	0.010	21.1
30000	0.000760	0.000714	872.1	927.7	1147742	1298397	1864960	0.515	268.8	0.011	21.2
40000	0.000780	0.000736	842.9	893.2	1080653	1213589	1799250	0.520	259.4	0.011	21.1
50000	0.000781	0.000738	868.2	920.0	1111060	1247374	1853238	0.527	267.1	0.011	20.8
60000	0.000790	0.000729	817.9	885.6	1035767	1214210	1764086	0.521	254.3	0.011	21.0
70000	0.000803	0.000736	809.5	883.2	1007980	1199937	1752364	0.533	252.6	0.011	20.8
80000	0.000808	0.000752	818.9	879.7	1013013	1169047	1759397	0.529	253.6	0.011	20.8
90000	0.000808	0.000732	786.7	868.4	973298	1185733	1712511	0.534	246.8	0.011	20.8
100000	0.000822	0.000747	774.8	852.8	942064	1141329	1684311	0.537	242.8	0.011	20.8
200000	0.000957	0.000787	599.8	729.1	626521	925930	1365279	0.558	196.8	0.011	21.9
252900	0.000986	0.000794	628.7	780.9	637436	983296	1445054	0.576	208.3	0.011	21.4
300000	0.001002	0.000811	599.4	740.9	598176	914139	1374656	0.557	188.2	0.011	21.9

Filename : RA3255
Material : Asphalt Rubber Hot Mix, California

Beam width (cm) : 4.890 Beam depth (cm) : 4.887 Bulk density (KN/m^3) : 23.13 Deflection (mm) : 1.082

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.002088	0.002163	3308.8	3193.6	1584678	1476151	1900124	5.873	996.5	0.013	21.2
10	0.002113	0.002142	2557.7	2522.5	1210693	1177528	1484907	5.160	778.8	0.013	21.2
20	0.002142	0.002137	2331.4	2336.7	1088376	1093340	1364521	5.101	715.6	0.013	21.2
30	0.002200	0.002175	2379.9	2406.8	1082032	1106648	1399133	5.130	733.8	0.013	21.2
40	0.002263	0.002191	2264.0	2338.4	1000258	1067139	1345008	5.132	705.4	0.013	21.2
50	0.002275	0.002201	2293.7	2370.6	1008256	1076999	1363004	5.199	714.8	0.013	21.2
60	0.002286	0.002204	2211.4	2293.6	967231	1040456	1316393	5.151	690.4	0.013	21.2
70	0.002322	0.002208	2173.5	2286.5	935858	1035698	1302879	5.156	683.3	0.013	21.2
80	0.002327	0.002200	2117.3	2240.3	909726	1018598	1272748	5.151	667.5	0.014	21.2
90	0.002339	0.002181	1996.9	2141.0	853808	981434	1208073	5.127	633.6	0.014	21.2
100	0.002334	0.002206	2052.4	2171.3	879388	984261	1233653	5.104	647.0	0.014	21.2
200	0.002408	0.002247	1900.5	2036.4	789340	906279	1149397	5.020	602.8	0.014	21.2
300	0.002437	0.002263	1757.1	1891.9	720941	835881	1065140	4.936	558.6	0.014	21.2
400	0.002472	0.002272	1676.7	1824.2	678385	803061	1021494	4.859	535.7	0.014	21.2
500	0.002514	0.002303	1676.3	1830.2	666753	794787	1023011	4.781	536.5	0.014	21.1
600	0.002575	0.002314	1627.2	1810.4	631954	782307	1001981	4.794	525.5	0.014	21.1
700	0.002575	0.002308	1556.6	1736.9	604574	752658	959853	4.743	503.4	0.014	21.2
800	0.002583	0.002309	1513.4	1692.8	585910	733007	934273	4.631	490.0	0.014	21.2
900	0.002590	0.002319	1509.7	1685.8	583021	726940	931239	4.585	488.4	0.014	21.2
1000	0.002622	0.002329	1484.4	1671.3	566059	717632	919241	4.526	482.1	0.014	21.1
1203	0.002611	0.002306	1356.9	1536.3	519738	666236	842500	4.451	441.8	0.014	21.1
1500	0.002637	0.002308	1339.0	1530.2	507768	663092	834985	4.277	437.9	0.014	21.1
1750	0.002675	0.002296	1303.2	1518.1	487235	661155	819953	4.165	430.0	0.014	21.1
2000	0.002598	0.002268	1265.4	1449.1	487104	638863	789822	3.933	414.2	0.014	21.0

Filename : RE1245
Material : Asphalt Rubber Hot Mix, California

Beam width (cm) : 4.834 Beam depth (cm) : 4.892 Bulk density (KN/m^3) : 23.17 Deflection (mm) : 0.8839

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.002106	0.001613	2699.5	3525.2	1281781	2185853	2185853	5.077	928.7	0.012	21.0
10	0.002111	0.001636	2367.5	3055.5	1121541	1868062	1907295	4.637	810.3	0.012	21.0
20	0.002155	0.001629	2171.2	2872.4	1007428	1763120	1768016	4.615	751.1	0.012	21.0
30	0.002178	0.001637	2152.3	2863.4	988122	1748779	1756846	4.539	746.4	0.012	21.0
40	0.002113	0.001626	2059.4	2676.0	974815	1645905	1663970	4.487	707.0	0.013	21.0
50	0.002113	0.001629	2012.9	2610.3	952820	1602260	1625014	4.459	690.4	0.013	21.0
60	0.002108	0.001655	1975.8	2515.7	937375	1519727	1582265	4.432	672.2	0.013	21.0
70	0.002137	0.001659	2002.4	2580.1	936893	1555581	1611982	4.418	684.9	0.013	21.0
80	0.002126	0.001637	1910.7	2480.7	898832	1515107	1543308	4.413	655.7	0.013	21.0
90	0.002154	0.001652	1905.1	2483.4	884629	1503179	1541446	4.419	654.9	0.013	21.0
100	0.002183	0.001647	1909.7	2531.1	874769	1536620	1556270	4.375	661.2	0.013	21.0
200	0.002160	0.001670	1736.5	2246.0	803888	1344870	1400306	4.255	594.9	0.013	21.1
300	0.002170	0.001695	1686.4	2159.3	777135	1274196	1353833	4.192	575.2	0.013	21.1
400	0.002165	0.001724	1642.6	2062.6	758657	1196283	1307430	4.163	555.4	0.014	21.1
500	0.002157	0.001724	1575.2	1970.6	730318	1142915	1251718	4.130	531.8	0.014	21.2
600	0.002203	0.001755	1573.0	1974.0	714115	1124575	1251718	4.137	531.8	0.014	21.2
700	0.002201	0.001759	1525.8	1909.8	693223	1085963	1212693	4.093	515.2	0.014	21.2
800	0.002211	0.001770	1492.1	1863.8	674876	1052935	1184837	4.073	503.4	0.014	21.3
900	0.002262	0.001773	1464.5	1867.9	647509	1053280	1173736	4.106	498.7	0.014	21.3
1000	0.002232	0.001787	1459.1	1823.2	653653	1020598	1158843	3.967	492.3	0.014	21.3
1741	0.002209	0.001798	1300.5	1598.0	588619	888766	1025149	3.681	435.5	0.014	21.3
2000	0.002201	0.001800	1281.9	1567.9	582393	871321	1008463	3.561	428.4	0.014	21.4
2567	0.002122	0.001737	1155.1	1411.1	544202	812231	908140	3.233	385.8	0.014	21.4
3000	0.002050	0.001673	1115.7	1367.1	544195	816989	878423	2.826	373.2	0.014	21.5

Filename : RB4330
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 4.877 Beam depth (cm) : 4.968 Bulk density (KN/m^3) : 23.02 Deflection (mm) : 0.2311

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000478	0.000464	1097.6	1131.1	2294932	2437038	2999118	0.282	352.1	0.008	21.1
20	0.000481	0.000453	980.3	1040.0	2040093	2295966	2716906	0.263	319.0	0.008	21.1
30	0.000472	0.000457	980.0	1011.9	2074843	2212192	2680431	0.262	314.7	0.008	21.1
40	0.000486	0.000452	957.2	1028.2	1970660	2273695	2668917	0.262	313.3	0.008	21.1
50	0.000476	0.000468	1000.5	1018.1	2101803	2176131	2716906	0.262	319.0	0.008	21.1
80	0.000476	0.000476	1004.9	1004.9	2111111	2111111	2705391	0.263	317.6	0.008	21.1
100	0.000481	0.000451	967.6	1029.9	2013823	2281349	2686154	0.267	315.4	0.008	21.1
200	0.000485	0.000489	964.5	955.6	1988656	1952457	2584384	0.264	303.4	0.008	21.1
300	0.000474	0.000492	1000.7	962.9	2112076	1955353	2642026	0.262	310.2	0.008	21.1
400	0.000486	0.000469	928.4	962.3	1911363	2053676	2544117	0.267	298.7	0.008	21.1
500	0.000492	0.000460	930.8	995.7	1893160	2166202	2590176	0.268	304.1	0.008	21.2
600	0.000481	0.000510	988.3	932.0	2053538	1826348	2582453	0.265	303.2	0.008	21.2
700	0.000497	0.000480	929.4	962.7	1870545	2006514	2545979	0.268	298.9	0.008	21.2
800	0.000487	0.000486	945.0	947.9	1939632	1951561	2547909	0.271	299.1	0.008	21.2
900	0.000482	0.000457	911.9	961.0	1891919	2100769	2519157	0.271	295.8	0.008	21.2
1000	0.000492	0.000492	943.6	943.6	1919154	1919154	2540256	0.271	298.2	0.008	21.2
2000	0.000494	0.000495	927.2	925.8	1877233	1871579	2494197	0.262	292.8	0.008	21.3
3000	0.000487	0.000481	940.0	953.1	1929290	1983485	2547909	0.267	299.1	0.008	20.3
4000	0.000481	0.000482	966.5	965.0	2008238	2002032	2599760	0.272	305.2	0.008	20.3
5000	0.000501	0.000474	930.8	983.5	1859375	2075809	2574800	0.277	302.3	0.008	20.6
6000	0.000497	0.000514	920.7	890.0	1852893	1731472	2436555	0.275	286.1	0.008	20.9
7000	0.000486	0.000490	865.6	859.0	1779393	1752433	2321340	0.271	272.5	0.009	21.2
8000	0.000501	0.000469	832.6	888.1	1663143	1892264	2313686	0.270	271.8	0.009	21.3
9000	0.000492	0.000473	813.1	845.1	1653697	1786495	2231084	0.267	261.9	0.009	21.4
10000	0.000495	0.000477	823.0	855.2	1661281	1793596	2257975	0.266	265.1	0.009	21.4
20000	0.000508	0.000501	886.4	899.7	1744711	1796975	2403942	0.274	282.2	0.008	20.6
30000	0.000514	0.000513	870.4	872.8	1693136	1702996	2346300	0.266	275.5	0.009	20.5
40000	0.000515	0.000498	843.7	872.8	1639079	1753881	2309825	0.270	271.2	0.009	20.6
50000	0.000513	0.000495	825.5	855.4	1610672	1729197	2261836	0.270	265.6	0.009	20.5
60000	0.000520	0.000504	835.4	862.6	1606535	1712787	2284865	0.271	268.3	0.009	20.6
70000	0.000513	0.000495	616.3	639.5	1200626	1292744	1689689	0.238	198.4	0.01	23.6
80000	0.000520	0.000487	565.0	603.1	1086652	1237790	1570612	0.241	184.4	0.01	23.8
90000	0.000519	0.000525	602.3	594.6	1161601	1132090	1610948	0.238	189.1	0.01	23.7
100000	0.000533	0.000510	619.0	647.0	1160360	1267784	1703065	0.240	200.0	0.01	23.7
165090	0.000537	0.000507	602.9	639.2	1122437	1261854	1670452	0.250	196.1	0.01	23.1
200000	0.000545	0.000524	546.7	569.3	1002533	1086928	1501524	0.244	176.3	0.011	23.9
300000	0.000557	0.000542	537.3	551.3	965507	1016530	1464981	0.246	172.0	0.011	24.1
400000	0.000562	0.000532	596.0	630.3	1059693	1184906	1649353	0.253	193.6	0.011	23.4
500000	0.000572	0.000539	625.2	664.1	1092720	1232964	1733817	0.271	203.6	0.01	22.0
600000	0.000564	0.000567	617.2	613.9	1094374	1082860	1657006	0.269	194.5	0.011	22.1
700000	0.000572	0.000556	602.5	620.3	1053073	1116094	1645492	0.270	193.2	0.011	22.1
800000	0.000582	0.000554	557.1	584.8	957440	1055073	1536068	0.276	180.3	0.011	22.1

Filename : RE3360
Material : Asphalt Rubber Hot Mix, California

Beam width (cm) : 4.912			Beam depth (cm) : 4.935			Bulk density (KN/m^3) : 23.16			Deflection (mm) : 0.4597		
Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000867	0.000953	2004.1	1822.1	2312307	1911432	2600725	0.995	599.6	0.009	22.5
13	0.000878	0.000945	1781.7	1655.8	2028854	1752364	2338715	0.970	539.3	0.01	22.5
20	0.000885	0.000951	1772.7	1650.2	2001963	1734920	2328924	0.972	537.0	0.01	22.5
30	0.000899	0.000955	1719.9	1618.5	1913087	1694170	2272178	0.979	523.9	0.01	22.5
40	0.000890	0.000952	1721.9	1608.7	1935427	1689413	2266318	0.981	522.6	0.01	22.5
50	0.000893	0.000948	1670.5	1573.1	1871096	1659282	2207710	0.984	509.0	0.01	22.5
60	0.000905	0.000954	1686.3	1599.7	1862684	1676243	2237014	0.986	515.8	0.01	22.5
70	0.000899	0.000954	1659.8	1563.6	1846136	1638459	2193989	0.989	505.9	0.01	22.5
80	0.000904	0.000954	1631.2	1545.7	1803939	1619636	2162686	0.991	498.7	0.01	22.5
90	0.000907	0.000965	1653.8	1555.4	1822555	1612258	2184198	0.995	503.6	0.01	22.5
100	0.000907	0.000965	1607.8	1512.3	1772015	1567509	2123591	0.992	489.6	0.01	22.6
200	0.000929	0.000969	1577.2	1512.7	1697204	1561166	2104009	1.002	485.1	0.011	22.7
300	0.000926	0.000971	1490.5	1421.7	1609362	1464084	1982795	1.006	457.2	0.011	22.7
400	0.000936	0.000973	1494.7	1437.1	1597709	1476771	1996516	1.007	460.3	0.011	22.7
500	0.000939	0.000988	1437.3	1366.0	1531242	1382999	1908467	1.007	440.0	0.011	22.3
600	0.000948	0.000980	1465.5	1417.1	1545790	1445537	1963282	1.015	452.7	0.011	22.2
700	0.000953	0.000985	1461.7	1415.2	1533310	1437401	1959352	1.013	451.8	0.011	22.2
800	0.000947	0.000981	1418.9	1369.1	1498284	1394996	1898745	1.011	437.8	0.011	22.3
900	0.000961	0.000980	1432.6	1403.6	1491389	1431678	1931979	1.013	445.4	0.011	22.3
1000	0.000951	0.000991	1446.0	1388.2	1520210	1401064	1929979	1.013	445.0	0.011	22.4
2000	0.000977	0.000999	1387.4	1357.0	1419681	1358108	1869372	1.027	431.0	0.011	22.5
3000	0.000996	0.000996	1320.4	1320.4	1325633	1325633	1798974	1.026	414.8	0.011	22.3
4000	0.001013	0.001011	1320.5	1323.2	1303845	1309223	1800974	1.037	415.2	0.011	22.4
5000	0.001019	0.001018	1319.7	1321.0	1295088	1297777	1798974	1.046	414.8	0.011	22.1
6000	0.001025	0.001024	1308.2	1309.6	1275989	1278609	1783323	1.050	411.2	0.011	22.2
7000	0.001045	0.001033	1252.5	1267.7	1198558	1227793	1716855	1.056	395.9	0.011	22.5
8000	0.001063	0.001047	1205.2	1223.2	1134021	1168151	1654317	1.045	381.4	0.012	22.3
9000	0.001051	0.001031	1243.3	1268.5	1182630	1231033	1710994	1.039	394.5	0.011	22.5
10000	0.001049	0.001035	1325.4	1344.1	1263233	1299156	1818556	1.049	419.3	0.011	21.7
30002	0.001115	0.001080	1033.8	1067.8	927240	989226	1431402	0.997	330.0	0.012	23.4
40000	0.001141	0.001095	969.0	1009.6	849188	921862	1347283	1.019	310.6	0.012	23.4
50000	0.001160	0.001111	976.4	1019.4	841880	917793	1359005	1.027	313.3	0.012	23.0
60000	0.001189	0.001121	1076.4	1141.5	905314	1018047	1509591	1.112	348.1	0.012	21.8
70000	0.001219	0.001123	1027.1	1114.9	842431	992535	1456776	1.111	335.9	0.012	21.9
80000	0.001241	0.001137	1060.0	1157.3	854084	1017978	1507661	1.144	347.6	0.012	21.5
90000	0.001238	0.001140	935.9	1016.4	755968	891592	1327701	1.061	306.1	0.012	22.6
100000	0.001275	0.001151	980.7	1085.5	769482	942753	1404029	1.103	323.7	0.012	22.3
120090	0.001277	0.001165	944.3	1034.7	739627	888145	1345352	1.078	310.2	0.012	22.4
150020	0.001315	0.001191	961.3	1061.5	730939	891179	1374656	1.132	317.0	0.012	22.0

Filename : RA1460
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 4.867 Beam depth (cm) : 4.859 Bulk density (KN/m^3) : 23.25 Deflection (mm) : 0.2123

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000560	0.000492	4043.6	4600.3	7217686	9342036	12895719	0.308	1298.5	0.003	-2.7
10	0.000557	0.000506	4077.0	4491.3	7316285	8878692	12806084	0.285	1289.5	0.003	-2.7
20	0.000562	0.000492	4003.5	4566.8	7127362	9273775	12783330	0.283	1287.2	0.003	-2.7
30	0.000571	0.000493	3970.1	4593.7	6957055	9314456	12761266	0.286	1284.9	0.003	-2.7
40	0.000558	0.000501	4007.6	4460.2	7182522	8895929	12649567	0.285	1273.7	0.003	-2.7
50	0.000571	0.000494	3935.6	4553.0	6887691	9217926	12649567	0.287	1273.7	0.003	-2.7
60	0.000561	0.000506	4049.9	4491.3	7219755	8878692	12761266	0.286	1284.9	0.003	-2.7
70	0.000562	0.000507	4012.1	4454.7	7132878	8793194	12649567	0.293	1273.7	0.003	-2.7
80	0.000563	0.000507	4052.2	4505.1	7194933	8893171	12783330	0.290	1287.2	0.003	-2.7
90	0.000565	0.000494	3957.2	4524.3	7008078	9160008	12649567	0.287	1273.7	0.003	-2.7
100	0.000571	0.000508	3997.4	4489.7	7004631	8836632	12671631	0.293	1275.9	0.003	-2.8
200	0.000565	0.000524	4100.2	4414.8	7261125	8417416	12739202	0.299	1282.7	0.003	-2.8
300	0.000565	0.000508	4045.7	4496.5	7164595	8850422	12761266	0.300	1284.9	0.003	-2.6
400	0.000576	0.000504	3971.0	4540.8	6895690	9016592	12694385	0.311	1278.2	0.003	-2.3
500	0.000570	0.000504	3997.4	4523.7	7014284	8982806	12716449	0.295	1280.4	0.003	-2.2
600	0.000573	0.000505	4000.1	4537.0	6982567	8982806	12739202	0.304	1282.7	0.003	-2.1
700	0.000577	0.000502	3981.7	4578.3	6896379	9117948	12761266	0.310	1284.9	0.003	-2.4
800	0.000581	0.000509	3973.3	4537.7	6837840	8917993	12694385	0.310	1278.2	0.003	-2.7
900	0.000568	0.000520	4056.3	4434.0	7136325	8527047	12694385	0.312	1278.2	0.003	-2.8
1000	0.000585	0.000503	3939.9	4582.0	6737173	9111743	12694385	0.305	1278.2	0.003	-2.7
2000	0.000576	0.000520	4045.4	4480.2	7025316	8615992	12739202	0.317	1282.7	0.003	-2.5
3000	0.000580	0.000512	3965.5	4496.6	6833083	8785609	12626814	0.318	1271.4	0.003	-2.2
4000	0.000586	0.000514	3926.6	4478.6	6697251	8712522	12537179	0.325	1262.4	0.003	-2.0
5000	0.000592	0.000520	3931.5	4472.2	6646504	8600823	12537179	0.313	1262.4	0.003	-2.0
6000	0.000587	0.000508	3889.1	4493.5	6624854	8844217	12492361	0.323	1257.9	0.003	-2.6
7000	0.000584	0.000504	3878.0	4491.0	6639747	8904203	12470297	0.337	1255.7	0.003	-2.8
8000	0.000586	0.000504	3878.2	4508.3	6614649	8938678	12492361	0.332	1257.9	0.003	-2.6
9000	0.000582	0.000513	3907.3	4435.4	6715454	8653915	12447544	0.337	1253.4	0.003	-2.3
10000	0.000579	0.000512	3857.7	4363.0	6664362	8524978	12268963	0.342	1235.4	0.003	-2.2
20000	0.000600	0.000510	3743.4	4411.1	6234390	8656673	12134511	0.331	1221.8	0.003	-2.8
30000	0.000571	0.000490	3658.1	4264.1	6401939	8698732	11798724	0.307	1188.0	0.003	-2.6
40000	0.000533	0.000456	3437.1	4021.2	6443653	8820084	11104398	0.283	1118.2	0.003	-2.0
45444	0.000458	0.000405	3013.5	3406.8	6577416	8406384	9581982	0.202	964.8	0.003	-1.9
50000	0.000374	0.000324	2405.9	2776.5	6433242	8567727	7723779	0.133	777.7	0.003	-3.1
60000	0.000219	0.000188	1436.3	1675.7	6557628	8925578	4634336	0.042	466.6	0.002	-2.4

Filename : RA2490
Material : Asphalt Rubber Hot Mix, California

Beam width (cm) : 4.867 Beam depth (cm) : 4.895 Bulk density (KN/m^3) : 23.17 Deflection (mm) : 0.3175

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000733	0.000780	6361.1	5978.3	8677358	7664482	12261379	0.702	1886.8	0.003	-1.7
11	0.000743	0.000742	6061.9	6074.1	8153338	8186434	12071077	0.720	1857.6	0.003	-1.7
23	0.000733	0.000761	6170.2	5940.7	8416727	7803072	12041428	0.726	1853.0	0.003	-1.7
30	0.000743	0.000771	6105.5	5887.2	8211945	7635523	11924213	0.720	1835.0	0.003	-1.7
40	0.000738	0.000772	6138.0	5871.4	8313991	7607254	11939382	0.706	1837.3	0.003	-1.7
50	0.000738	0.000765	6170.7	5954.5	8358119	7782387	12056597	0.725	1855.3	0.003	-1.7
60	0.000755	0.000769	6092.1	5985.9	8064392	7785834	12012469	0.722	1848.5	0.003	-1.7
70	0.000743	0.000767	6138.5	5941.8	8264347	7743775	12012469	0.741	1848.5	0.003	-1.7
80	0.000746	0.000769	6124.6	5940.6	8212635	7727227	11997990	0.745	1846.3	0.003	-1.7
90	0.000748	0.000774	6181.3	5973.1	8264347	7716884	12085556	0.760	1859.8	0.003	-1.7
100	0.000761	0.000765	6004.6	5969.6	7894086	7802382	11909734	0.767	1832.7	0.003	-2.4
200	0.000802	0.000782	6002.0	6150.6	7487281	7863058	12085556	0.873	1859.8	0.003	-2.5
300	0.000831	0.000804	5996.4	6202.0	7212170	7715505	12129684	0.955	1866.6	0.003	-2.4
400	0.000849	0.000811	5900.8	6182.9	6948092	7627939	12012469	0.998	1848.5	0.003	-2.3
500	0.000866	0.000809	5848.2	6257.5	6755721	7734122	12026949	1.025	1850.8	0.003	-2.2
600	0.000892	0.000817	5746.2	6281.0	6438482	7692752	11939382	1.084	1837.3	0.004	-2.1
700	0.000921	0.000815	5615.4	6344.2	6098352	7784455	11851126	1.112	1823.7	0.004	-1.9
800	0.000948	0.000807	5501.3	6461.4	5805452	8008543	11822167	1.146	1819.2	0.004	-1.8
900	0.000965	0.000815	5452.5	6459.3	5647419	7925113	11763560	1.205	1810.2	0.004	-1.7
1000	0.000997	0.000835	5400.0	6445.3	5417470	7717574	11689783	1.269	1799.0	0.004	-2.3
2000	0.001354	0.000851	4557.2	7250.8	3366622	8522910	11133357	1.665	1713.3	0.004	-2.6
3000	0.001529	0.000921	4177.1	6935.0	2732489	7531409	10371459	2.010	1596.0	0.005	-2.6
4000	0.001507	0.000732	3550.8	7307.3	2356090	9978444	9507516	2.069	1463.0	0.006	-2.5
4037	0.001508	0.000729	3512.7	7262.5	2329683	9957070	9419260	2.070	1449.5	0.006	-2.5

Filename : RB34100
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 4.902 Beam depth (cm) : 5.001 Bulk density (KN/m^3) : 23.02 Deflection (mm) : 0.3556

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000963	0.000903	6636.1	7074.3	6894517	7834789	11903528	1.631	2204.7	0.004	-2.2
13	0.000997	0.000901	6160.5	6812.2	6180402	7556920	11246435	0.996	2083.0	0.003	-2.2
20	0.001007	0.000900	6026.0	6744.3	5982792	7494176	11063717	0.991	2049.2	0.003	-2.2
30	0.001028	0.000895	5908.6	6783.6	5747258	7575537	10978909	1.006	2033.4	0.003	-2.2
40	0.001027	0.000890	5874.6	6779.9	5722505	7622423	10942365	1.026	2026.6	0.003	-2.2
50	0.001036	0.000903	5891.8	6757.2	5689754	7483833	10942365	1.040	2026.6	0.003	-2.2
60	0.001049	0.000887	5768.8	6825.6	5499728	7699647	10869278	1.040	2013.1	0.003	-2.2
70	0.001050	0.000903	5722.7	6657.6	5448015	7373513	10698972	1.048	1981.5	0.003	-2.2
80	0.001058	0.000890	5723.1	6806.3	5410024	7652071	10807913	1.046	2001.8	0.003	-2.2
90	0.001061	0.000895	5700.9	6753.9	5373894	7542441	10747237	1.059	1990.6	0.003	-2.2
100	0.001070	0.000894	5610.5	6713.9	5244544	7510034	10625885	1.066	1968.0	0.003	-2.1
200	0.001126	0.000916	5466.6	6719.9	4853115	7333522	10479711	1.157	1941.0	0.003	-1.9
300	0.001165	0.000922	5243.7	6624.5	4500435	7182522	10175641	1.235	1884.6	0.003	-1.8
400	0.001222	0.000948	5103.7	6580.3	4177336	6943955	9992924	1.364	1850.8	0.003	-1.6
500	0.001290	0.000955	4898.3	6617.8	3796318	6929475	9786074	1.518	1812.4	0.004	-1.6
600	0.001377	0.000985	4726.4	6607.0	3433089	6708490	9579224	1.709	1774.1	0.004	-2.0
700	0.001478	0.001010	4573.7	6691.9	3094407	6624371	9444771	1.870	1749.3	0.004	-2.2
800	0.001590	0.001028	4346.9	6721.9	2734281	6538391	9177245	2.046	1699.8	0.004	-2.2
900	0.001696	0.001031	4177.5	6869.9	2463721	6662983	9031071	2.224	1672.7	0.004	-2.0
1000	0.001827	0.001058	3997.2	6901.9	2188197	6524601	8800089	2.402	1629.9	0.005	-1.9
1060	0.001891	0.001070	3837.3	6782.2	2029543	6339746	8520152	2.525	1578.0	0.005	-1.8
1536	0.002779	0.001199	3132.7	7257.7	1127333	6050983	7607254	3.605	1409.0	0.005	-2.1
1751	0.003113	0.001252	2886.4	7178.4	927378	5735399	7157010	3.908	1325.5	0.005	-1.8
1840	0.003223	0.001269	2703.6	6863.7	838915	5406852	6742965	4.320	1248.9	0.006	-1.7
2000	0.003059	0.001445	2520.9	5335.5	824159	3691721	5951833	4.254	1102.4	0.007	-1.6
2475	0.003169	0.001648	1750.8	3367.0	552448	2043195	4004409	3.317	741.7	0.008	-1.9
2598	0.003122	0.001673	1677.8	3130.1	537527	1870682	3797490	3.029	703.3	0.008	-1.7
2858	0.003208	0.001693	1401.3	2655.7	436819	1569026	3188938	2.781	590.6	0.008	-1.9
2896	0.003197	0.001706	1428.2	2676.7	446658	1569026	3237616	2.738	599.6	0.009	-2.0

Filename : RC1370
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 4.877 Beam depth (cm) : 4.897 Bulk density (KN/m³) : 23.14 Deflection (mm) : 0.5004

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m³)	Max load (N)	Lag (sec)	Temp (C)
1	0.000885	0.000685	7190.8	9284.8	8124379	13547296	10224596	0.952	2488.8	0.002	-2.1
13	0.000882	0.000685	6842.3	8805.6	7757565	12848143	9715055	1.039	2364.8	0.002	-2.1
20	0.000903	0.000647	6368.6	8892.5	7053585	13752078	9363410	1.041	2279.1	0.002	-2.1
30	0.000900	0.000650	6345.5	8790.4	7050827	13531438	9298597	1.023	2263.3	0.002	-2.1
40	0.000900	0.000644	6258.1	8749.8	6953608	13593493	9205515	1.012	2240.8	0.002	-2.1
50	0.000900	0.000650	6238.0	8641.5	6931544	13302524	9140702	0.995	2225.0	0.002	-2.1
60	0.000888	0.000644	6217.2	8577.4	7001183	13325967	9094505	0.997	2213.7	0.002	-2.1
70	0.000897	0.000632	6130.7	8704.2	6835014	13778279	9075889	1.006	2209.2	0.002	-2.1
80	0.000894	0.000632	6063.9	8580.8	6783163	13583150	8964879	0.996	2182.1	0.002	-2.1
90	0.000891	0.000632	6116.3	8626.3	6864524	13654858	9029692	1.000	2197.9	0.002	-2.1
100	0.000900	0.000620	6049.9	8784.2	6722556	14171983	9039345	1.009	2200.2	0.002	-2.2
200	0.000888	0.000635	5941.7	8312.6	6690977	13097053	8742860	0.978	2128.1	0.002	-2.2
300	0.000912	0.000635	5932.9	8523.6	6506467	13428702	8826290	1.044	2148.4	0.002	-2.0
400	0.000909	0.000623	5808.5	8476.7	6390838	13610041	8696664	1.040	2116.8	0.002	-2.1
500	0.000897	0.000629	5794.1	8265.7	6459719	13145318	8594618	1.025	2092.0	0.002	-2.2
600	0.000888	0.000623	5645.4	8049.2	6357328	12924678	8372599	1.023	2037.9	0.002	-2.2
700	0.000888	0.000626	5575.2	7911.3	6278242	12642672	8251936	1.022	2008.6	0.002	-2.2
800	0.000885	0.000611	5521.7	7999.6	6238941	13094984	8242973	1.005	2006.3	0.002	-2.0
900	0.000861	0.000614	5551.4	7787.9	6446136	12686800	8177470	0.995	1990.6	0.002	-2.1
1000	0.000864	0.000620	5521.7	7698.3	6389528	12420653	8112657	0.982	1974.8	0.002	-2.2
1060	0.000864	0.000617	5479.1	7676.2	6340297	12444096	8066461	0.811	1963.5	0.002	-2.2
2000	0.000805	0.000572	5074.9	7136.3	6307477	12473055	7483144	0.884	1821.5	0.002	-2.0
2637	0.000557	0.000432	3805.8	4908.1	6829635	11358823	5408645	0.468	1316.5	0.002	-2.2
2762	0.000438	0.000349	3151.0	3959.0	7193554	11355376	4426935	0.227	1077.6	0.002	-2.2
2859	0.000358	0.000295	2646.0	3207.3	7399714	10872036	3658280	0.173	890.4	0.002	-2.3
2968	0.000277	0.000241	2314.4	2657.2	8351224	11008557	3121091	0.110	759.7	0.002	-2.1
3000	0.000271	0.000221	2123.1	2610.8	7829273	11839405	2954370	0.103	719.1	0.002	-2.1

Filename : RD1450
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 4.890 Beam depth (cm) : 4.892 Bulk density (KN/m^3) : 22.91 Deflection (mm) : 0.1778

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000399	0.000406	3525.2	3460.5	8844906	8522910	12413069	0.159	1073.0	0.002	-1.7
10	0.000407	0.000405	3423.9	3436.5	8417416	8479471	12191050	0.152	1053.9	0.002	-1.7
20	0.000396	0.000400	3427.8	3395.9	8649088	8488435	12126237	0.152	1048.2	0.002	-1.7
30	0.000399	0.000401	3388.8	3376.2	8486366	8423622	12021433	0.147	1039.3	0.002	-1.7
40	0.000396	0.000405	3391.5	3322.8	8557385	8214014	11930419	0.150	1031.3	0.002	-1.7
60	0.000392	0.000404	3437.6	3336.1	8772509	8262279	12034533	0.149	1040.4	0.002	-1.7
70	0.000399	0.000403	3419.9	3382.0	8580828	8391215	12086935	0.150	1044.9	0.002	-1.7
80	0.000399	0.000404	3404.6	3360.6	8542216	8322955	12021433	0.156	1039.3	0.002	-1.7
90	0.000404	0.000401	3366.3	3391.4	8337434	8461544	12009022	0.152	1038.1	0.002	-1.7
100	0.000401	0.000403	3391.9	3373.1	8462923	8369151	12021433	0.158	1039.3	0.002	-1.8
200	0.000399	0.000398	3408.6	3415.0	8552558	8584275	12126237	0.155	1048.2	0.002	-1.8
300	0.000395	0.000399	3438.5	3400.1	8708385	8514636	12152438	0.162	1050.5	0.002	-1.7
400	0.000404	0.000410	3451.3	3394.9	8547732	8270553	12164849	0.167	1051.6	0.002	-1.6
500	0.000412	0.000405	3420.5	3477.1	8302959	8579449	12256552	0.168	1059.5	0.002	-1.7
600	0.000399	0.000417	3536.6	3378.7	8873176	8098867	12282753	0.169	1061.8	0.002	-1.7
700	0.000404	0.000438	3606.4	3324.2	8931783	7588637	12295854	0.164	1062.9	0.002	-1.7
800	0.000410	0.000420	3492.4	3405.7	8523599	8105762	12256552	0.163	1059.5	0.002	-1.7
900	0.000406	0.000421	3534.2	3409.1	8704938	8099557	12334466	0.168	1066.3	0.002	-1.7
1000	0.000398	0.000426	3601.6	3382.3	9053135	7890638	12360667	0.168	1068.5	0.002	-1.7
2000	0.000406	0.000431	3624.2	3411.4	8926267	7908565	12490982	0.169	1079.8	0.002	-1.6
3000	0.000412	0.000422	3566.5	3478.4	8657362	8234699	12517183	0.173	1082.1	0.002	-1.7
4000	0.000414	0.000415	3536.1	3529.8	8536700	8506362	12556485	0.167	1085.4	0.002	-1.7
5000	0.000409	0.000431	3625.7	3437.8	8864902	7969931	12543384	0.173	1084.3	0.002	-1.7
6000	0.000413	0.000424	3596.0	3507.6	8697353	8274690	12621298	0.170	1091.1	0.002	-1.7
7000	0.000414	0.000438	3661.0	3461.8	8838701	7902360	12647499	0.166	1093.3	0.002	-1.6
8000	0.000423	0.000434	3602.4	3515.8	8513257	8108520	12647499	0.160	1093.3	0.002	-1.7
9000	0.000415	0.000428	3586.2	3474.0	8642883	8109899	12543384	0.174	1084.3	0.002	-1.7
10000	0.000419	0.000405	3473.1	3594.7	8295375	8886276	12556485	0.169	1085.4	0.002	-1.7
20000	0.000419	0.000417	3544.9	3557.6	8467060	8527736	12621298	0.182	1091.1	0.002	-1.6
30000	0.000424	0.000431	3612.6	3556.4	8522220	8258831	12739202	0.182	1101.2	0.002	-1.6
40000	0.000417	0.000428	3629.0	3540.6	8698732	8279516	12739202	0.184	1101.2	0.002	-1.5
50000	0.000425	0.000438	3641.3	3536.0	8560143	8072666	12751613	0.189	1102.4	0.002	-1.6
60000	0.000427	0.000425	3596.3	3608.9	8425001	8483606	12804015	0.189	1106.8	0.002	-1.6
70000	0.000430	0.000416	3525.3	3645.3	8200913	8769061	12739202	0.193	1101.2	0.002	-1.9
80000	0.000431	0.000425	3588.1	3632.1	8332608	8538079	12830216	0.193	1109.1	0.002	-1.9
90000	0.000434	0.000421	3536.2	3648.8	8141616	8669084	12764714	0.203	1103.5	0.002	-1.7
100000	0.000441	0.000410	3464.2	3728.7	7854784	9100021	12764714	0.202	1103.5	0.002	-1.6
200000	0.000449	0.000440	3421.5	3490.9	7616217	7928561	12282753	0.214	1061.8	0.002	-0.6
300000	0.000472	0.000398	3118.0	3696.1	6611891	9291013	12021433	0.219	1039.3	0.003	-1.7
400000	0.000446	0.000413	3247.7	3505.1	7277673	8477403	11982821	0.214	1035.9	0.003	-1.8
450000	0.000415	0.000402	3236.9	3338.8	7801003	8299512	11682888	0.182	1009.9	0.003	-1.9
500000	0.000388	0.000386	3113.0	3131.0	8020264	8113347	11086124	0.163	959.2	0.003	-1.9
600000	0.000209	0.000235	2073.3	1843.7	9903978	7831341	6936370	0.047	599.6	0.002	-0.9
630830	0.000181	0.000211	1941.6	1667.2	10725173	7907876	6375944	0.034	551.2	0.002	-0.3

Filename : RD3470
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 4.836 Beam depth (cm) : 4.841 Bulk density (KN/m^3) : 22.92 Deflection (mm) : 0.2489

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000562	0.000482	4191.6	4891.3	7452116	10148061	11580842	0.354	1343.6	0.002	-1.3
13	0.000575	0.000492	4141.4	4844.2	7201138	9852266	11454664	0.314	1328.9	0.002	-1.3
20	0.000583	0.000478	4044.9	4927.0	6943265	10301820	11396746	0.324	1322.1	0.002	-1.3
30	0.000592	0.000488	3981.1	4825.9	6730416	9890188	11192654	0.320	1298.5	0.002	-1.3
40	0.000580	0.000490	4075.5	4818.7	7031521	9830202	11328485	0.323	1314.3	0.002	-1.3
60	0.000600	0.000482	3948.5	4912.8	6584036	10192189	11231266	0.333	1303.0	0.002	-1.3
70	0.000590	0.000487	4024.4	4873.6	6820741	10003266	11309179	0.335	1312.0	0.002	-1.3
80	0.000603	0.000489	3957.8	4879.5	6558869	9969481	11211960	0.340	1300.7	0.002	-1.3
90	0.000596	0.000498	4027.4	4823.3	6757583	9692302	11260225	0.339	1306.4	0.002	-1.3
100	0.000591	0.000497	4033.9	4795.9	6828119	9651621	11240919	0.338	1304.1	0.002	-1.1
200	0.000601	0.000497	4012.3	4854.4	6673739	9769526	11269878	0.352	1307.5	0.002	-1.0
300	0.000627	0.000501	3952.4	4945.0	6300996	9862608	11269878	0.378	1307.5	0.002	-1.4
400	0.000638	0.000510	3951.1	4937.4	6195847	9675064	11260225	0.386	1306.4	0.002	-1.7
500	0.000641	0.000515	3963.0	4938.0	6178472	9592324	11280220	0.400	1308.6	0.002	-1.6
600	0.000657	0.000519	3933.5	4984.7	5986377	9613699	11280220	0.412	1308.6	0.002	-1.5
700	0.000659	0.000513	3906.3	5019.1	5931562	9792279	11269878	0.411	1307.5	0.002	-1.4
800	0.000664	0.000507	3869.8	5070.6	5829998	10009472	11260225	0.420	1306.4	0.002	-1.3
900	0.000671	0.000507	3810.4	5041.3	5676791	9937074	11134046	0.416	1291.7	0.002	-1.2
1000	0.000670	0.000516	3844.0	4993.8	5739536	9686786	11143699	0.418	1292.9	0.002	-1.1
2000	0.000685	0.000507	3714.9	5026.0	5420228	9921216	10959603	0.446	1271.4	0.002	-1.1
3000	0.000687	0.000511	3672.6	4936.0	5346728	9658516	10803776	0.452	1253.4	0.002	-1.1
4000	0.000711	0.000507	3535.4	4959.9	4974398	9790900	10590031	0.453	1228.6	0.003	-1.5
5000	0.000703	0.000505	3492.8	4858.0	4971916	9617836	10425240	0.452	1209.4	0.003	-1.8
6000	0.000706	0.000518	3488.7	4758.7	4939854	9191035	10328021	0.451	1198.2	0.003	-1.7
7000	0.000707	0.000519	3458.6	4709.0	4892003	9068994	10230801	0.451	1186.9	0.003	-1.6
8000	0.000707	0.000501	3360.8	4746.1	4753689	9480625	10094280	0.436	1171.1	0.003	-1.5
9000	0.000698	0.000507	3369.2	4642.6	4826707	9164834	10017056	0.432	1162.1	0.003	-1.3
10000	0.000688	0.000510	3333.8	4497.0	4843117	8812500	9822617	0.422	1139.6	0.003	-1.1
13945	0.000669	0.000504	3226.2	4285.8	4822570	8510499	9443392	0.385	1095.6	0.003	-1.3
22896	0.000372	0.000355	2279.2	2389.4	6131241	6738001	5984860	0.141	694.3	0.003	-1.4
23982	0.000338	0.000337	2146.5	2156.0	6346365	6402697	5518482	0.122	640.2	0.003	-1.0
26102	0.000282	0.000290	1844.4	1792.2	6549629	6184401	4663502	0.098	541.0	0.003	-1.2

Filename : RD4370
Material : Asphalt Rubber Hot Mix, California

Beam width (cm) : 4.862 Beam depth (cm) : 4.877 Bulk density (KN/m^3) : 22.97 Deflection (mm) : 0.5131

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000775	0.000849	6506.3	5935.6	8397421	6988772	7669309	0.471	1884.6	0.002	-1.6
10	0.000697	0.000778	6126.1	5492.4	8785609	7061859	7155631	0.454	1758.4	0.002	-1.6
20	0.000700	0.000793	6261.1	5531.4	8940747	6978430	7256988	0.475	1783.2	0.002	-1.6
30	0.000688	0.000808	6382.2	5440.2	9271707	6736622	7256988	0.458	1783.2	0.002	-1.6
40	0.000694	0.000802	6407.5	5549.9	9228268	6923270	7348691	0.476	1805.7	0.002	-1.6
50	0.000709	0.000802	6311.5	5584.2	8899377	6966708	7321111	0.466	1799.0	0.002	-1.6
60	0.000703	0.000811	6417.6	5568.2	9125533	6869764	7366618	0.477	1810.2	0.002	-1.6
70	0.000700	0.000814	6452.9	5554.7	9214478	6828050	7376271	0.474	1812.4	0.002	-1.6
80	0.000694	0.000811	6445.7	5521.5	9283428	6812191	7348691	0.487	1805.7	0.002	-1.6
90	0.000688	0.000808	6495.2	5536.5	9435808	6855836	7385235	0.482	1814.7	0.002	-1.6
100	0.000688	0.000834	6611.6	5454.6	9604735	6537356	7385235	0.483	1814.7	0.002	-1.5
200	0.000682	0.000840	6661.1	5409.2	9761252	6436896	7376271	0.481	1812.4	0.002	-1.7
300	0.000682	0.000861	6836.3	5417.0	10017746	6290102	7467975	0.499	1835.0	0.002	-2.0
400	0.000682	0.000894	6990.2	5335.8	10243212	5968588	7476938	0.525	1837.3	0.002	-2.0
500	0.000611	0.000888	7005.3	4819.3	11467764	5427055	7054964	0.363	1733.5	0.002	-1.9
600	0.000310	0.000676	5494.8	2517.4	17730493	3721576	4266005	0.072	1048.2	0.002	-1.8
700	0.000235	0.000548	4165.5	1788.4	17693949	3261749	3091718	0.034	759.7	0.002	-1.6
800	0.000215	0.000456	3121.1	1468.8	14547071	3221482	2467858	0.039	606.4	0.002	-1.5
900	0.000212	0.000393	2420.4	1301.8	11439495	3309669	2091736	0.030	514.0	0.002	-1.5
1000	0.000173	0.000331	2131.2	1113.6	12331018	3366691	1807317	0.020	444.1	0.002	-1.9

Filename : RE2360
Material : Asphalt Rubber Hot Mix, California

Beam width (cm) : 4.844 Beam depth (cm) : 4.902 Bulk density (KN/m^3) : 23.22 Deflection (mm) : 0.4420

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000724	0.000900	8767.7	7055.0	12107620	7838926	11155421	0.803	2389.6	0.003	-1.5
13	0.000715	0.000831	8054.7	6928.8	11262983	8333987	10629332	0.803	2276.8	0.002	-1.5
20	0.000706	0.000840	8124.4	6828.1	11504308	8125758	10587273	0.828	2267.9	0.002	-1.5
30	0.000706	0.000855	8154.0	6733.4	11545678	7873401	10524528	0.851	2254.3	0.002	-1.5
40	0.000700	0.000870	8245.7	6636.0	11774592	7626560	10492811	0.891	2247.6	0.002	-1.5
50	0.000724	0.000849	7965.1	6791.4	10999594	7996821	10461094	0.920	2240.8	0.002	-1.5
60	0.000724	0.000897	8140.2	6571.9	11242298	7326627	10376975	0.915	2222.7	0.003	-1.5
70	0.000721	0.000870	8023.7	6650.0	11126462	7642418	10376975	0.954	2222.7	0.003	-1.5
80	0.000721	0.000858	7891.3	6630.7	10942365	7725848	10282514	0.975	2202.4	0.003	-1.5
90	0.000718	0.000879	8128.5	6640.5	11318143	7554162	10429377	0.989	2234.0	0.003	-1.5
100	0.000730	0.000873	8001.0	6690.4	10959603	7662414	10398350	1.018	2227.3	0.003	-1.6
200	0.000688	0.000894	8172.0	6292.7	11871811	7039106	10145303	1.158	2173.2	0.003	-2.1
300	0.000659	0.000924	8338.1	5944.4	12661289	6434897	9903289	1.252	2121.3	0.004	-2.0
400	0.000670	0.000930	8203.7	5915.8	12235178	6362982	9808827	1.362	2101.0	0.004	-1.9
500	0.000665	0.000942	8254.0	5825.0	12421343	6185918	9745393	1.406	2087.5	0.004	-1.8
600	0.000659	0.000957	8320.9	5728.8	12635088	5988997	9682649	1.443	2074.0	0.004	-1.7
700	0.000665	0.000963	8117.5	5604.5	12215872	5822759	9461319	1.471	2026.6	0.004	-1.6
800	0.000670	0.000980	8009.2	5477.3	11944898	5586812	9282739	1.508	1988.3	0.004	-1.5
900	0.000647	0.000998	8152.6	5280.7	12607508	5289913	9145528	1.523	1959.0	0.004	-1.7
1000	0.000662	0.001022	7949.9	5145.4	12017296	5034108	8913856	1.550	1909.4	0.005	-2.1
1138	0.000647	0.001055	7821.7	4794.6	12095899	4545115	8482919	1.566	1817.0	0.005	-2.0
1421	0.000676	0.001180	6143.8	3521.8	9082784	2984432	6388218	1.691	1368.4	0.007	-1.7
1567	0.000742	0.001240	4806.4	2876.9	6477715	2320788	5135879	1.680	1100.1	0.007	-1.6
1604	0.000751	0.001261	4405.8	2624.7	5867024	2082290	4693840	1.647	1005.4	0.008	-1.5
1639	0.000763	0.001246	3922.7	2402.4	5142084	1928738	4251802	1.574	910.7	0.008	-1.5
1674	0.000763	0.001255	3628.1	2206.1	4755895	1758501	3915050	1.500	838.6	0.008	-1.7
1709	0.000748	0.001284	3657.5	2130.0	4890003	1658454	3841342	1.418	822.8	0.008	-1.9
1744	0.000739	0.001278	3402.8	1967.1	4604481	1538757	3557199	1.347	762.0	0.008	-2.1
1815	0.000715	0.001302	3401.8	1868.3	4756585	1434643	3441432	1.202	737.1	0.008	-2.1
1850	0.000718	0.001275	3132.7	1763.9	4362053	1383068	3220448	1.139	689.8	0.008	-2.1
2000	0.000665	0.001264	2878.3	1513.8	4331370	1198144	2831018	0.918	606.4	0.008	-2.0

Filename : RE4365
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 4.953 Beam depth (cm) : 4.912 Bulk density (KN/m^3) : 23.19 Deflection (mm) : 0.4699

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000858	0.000879	8593.9	8389.8	10013609	9544059	11371234	0.953	2664.6	0.003	-2.0
11	0.000834	0.000867	8379.5	8062.3	10042568	9297908	11005799	0.857	2578.9	0.002	-2.0
23	0.000834	0.000861	8291.2	8033.4	9937074	9328246	10928575	0.856	2560.9	0.002	-2.0
30	0.000831	0.000861	8240.9	7955.5	9912252	9237921	10842388	0.851	2540.6	0.002	-2.0
40	0.000825	0.000882	8365.7	7828.6	10134961	8875934	10832735	0.869	2538.4	0.002	-2.0
50	0.000822	0.000864	8227.1	7830.0	10003266	9060720	10745858	0.839	2518.1	0.002	-2.0
60	0.000817	0.000870	8265.0	7755.5	10122550	8913167	10716899	0.816	2511.3	0.002	-2.0
70	0.000828	0.000861	8116.8	7807.9	9797795	9066236	10658981	0.843	2497.8	0.002	-2.0
80	0.000822	0.000876	8226.4	7722.4	10001887	8814568	10668634	0.823	2500.0	0.002	-2.0
90	0.000817	0.000879	8241.6	7654.8	10094280	8708385	10630711	0.828	2491.0	0.002	-2.0
100	0.000817	0.000873	8131.3	7603.8	9958449	8709075	10524528	0.826	2466.2	0.002	-1.9
200	0.000787	0.000879	8076.8	7228.0	10266655	8222288	10217011	0.717	2394.1	0.002	-2.0
300	0.000757	0.000882	8049.2	6907.4	10634848	7830652	9957070	0.677	2333.2	0.002	-2.3
400	0.000733	0.000891	8084.4	6651.5	11028553	7465217	9774352	0.609	2290.4	0.002	-2.3
500	0.000685	0.000897	8101.6	6190.5	11820099	6901895	9399264	0.490	2202.4	0.002	-2.2
600	0.000620	0.000924	8470.5	5683.5	13666580	6152546	9110364	0.374	2134.8	0.003	-2.1
700	0.000548	0.000963	8847.7	5040.2	16136369	5236477	8600823	0.270	2015.4	0.003	-2.0
800	0.000420	0.000989	9494.4	4032.3	22596984	4075772	7581053	0.121	1776.4	0.003	-1.9
900	0.000229	0.000861	7392.1	1969.6	32216888	2287003	4165614	0.088	976.1	0.004	-1.8
1000	0.000152	0.000662	5229.5	1201.4	34410187	1816005	2616721	0.061	613.2	0.005	-2.0
1059	0.000134	0.000581	4501.6	1038.8	33569687	1787736	2260802	0.051	529.8	0.005	-2.2
1094	0.000128	0.000572	4338.1	971.5	33854450	1698032	2126073	0.040	498.2	0.005	-2.2

Filename : RF1340
Material : Asphalt Rubber Hot Mix, California

Beam width (cm) : 4.867 Beam depth (cm) : 4.921 Bulk density (KN/m^3) : 22.87 Deflection (mm) : 0.2845

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000596	0.000513	6404.8	7447.3	10746547	14530523	15234503	0.320	2123.5	0.002	-12.5
11	0.000578	0.000498	6203.6	7206.7	10730689	14480879	14749784	0.274	2055.9	0.001	-12.5
23	0.000584	0.000504	6201.5	7192.2	10617611	14281614	14733236	0.275	2053.7	0.001	-12.5
30	0.000581	0.000495	6151.4	7226.0	10585894	14607747	14700830	0.278	2049.2	0.001	-12.5
40	0.000578	0.000486	6107.9	7269.4	10565209	14966287	14684971	0.281	2046.9	0.001	-12.5
50	0.000575	0.000516	6301.3	7029.5	10956155	13636242	14700830	0.268	2049.2	0.001	-12.5
60	0.000584	0.000489	6109.8	7301.8	10461094	14941465	14717378	0.279	2051.4	0.001	-12.5
70	0.000578	0.000501	6220.7	7183.2	10760337	14349185	14749784	0.271	2055.9	0.001	-12.5
80	0.000578	0.000492	6169.2	7253.5	10671392	14752542	14749784	0.265	2055.9	0.001	-12.5
90	0.000578	0.000507	6241.4	7122.5	10796191	14059595	14717378	0.279	2051.4	0.001	-12.5
100	0.000578	0.000507	6248.2	7130.1	10807913	14075453	14733236	0.270	2053.7	0.001	-12.4
200	0.000584	0.000495	6143.7	7254.2	10519012	14664286	14717378	0.263	2051.4	0.001	-12.4
300	0.000578	0.000519	6275.3	6996.4	10854799	13493515	14636017	0.270	2040.1	0.001	-12.3
400	0.000581	0.000495	6097.3	7162.5	10492811	14479500	14571893	0.286	2031.1	0.001	-12.2
500	0.000578	0.000492	6040.6	7102.5	10449373	14445025	14442267	0.286	2013.1	0.001	-12.2
600	0.000584	0.000495	5954.7	7030.8	10195637	14213353	14264376	0.284	1988.3	0.001	-12.5
700	0.000578	0.000507	5994.4	6840.7	10369391	13503858	14134750	0.275	1970.3	0.001	-12.6
800	0.000566	0.000513	6024.4	6654.8	10640364	12983975	13989266	0.275	1950.0	0.001	-12.5
900	0.000563	0.000483	5743.2	6700.4	10197705	13879635	13681749	0.251	1907.1	0.002	-12.4
1000	0.000545	0.000489	5753.1	6419.5	10550040	13135665	13423186	0.241	1871.1	0.001	-12.3
2000	0.000331	0.000426	4910.1	3811.3	14844246	8944194	9493036	0.084	1323.3	0.002	-12.4
3000	0.000253	0.000328	3756.9	2903.1	14832524	8856628	7245266	0.041	1009.9	0.002	-12.5
4000	0.000209	0.000286	3328.8	2427.2	15957788	8484298	6210327	0.034	865.7	0.001	-12.3
5000	0.000176	0.000271	3224.9	2090.8	18342079	7710679	5611909	0.031	782.3	0.002	-12.5
6000	0.000167	0.000241	2915.3	2015.5	17470551	8350535	5272262	0.028	734.9	0.002	-12.5
7000	0.000161	0.000232	2787.9	1930.0	17325067	8303649	5045899	0.020	703.3	0.001	-12.4
8000	0.000155	0.000221	2612.9	1836.1	16862412	8326402	4770926	0.022	665.0	0.002	-12.6
9000	0.000143	0.000206	2557.2	1778.9	17878046	8651846	4641576	0.022	647.0	0.001	-12.3
10000	0.000134	0.000194	2493.0	1726.0	18590989	8910409	4512157	0.018	629.0	0.002	-12.5

Filename : RF2320
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 4.862 Beam depth (cm) : 4.900 Bulk density (KN/m^3) : 22.53 Deflection (mm) : 0.1397

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000292	0.000301	2845.7	2761.2	9744704	9174487	12658531	0.048	858.9	0.001	-11.9
11	0.000277	0.000277	2611.6	2611.6	9423397	9423397	11794587	0.045	800.3	0.001	-11.9
30	0.000262	0.000265	2582.0	2553.0	9846060	9626110	11595322	0.047	786.8	0.001	-11.9
40	0.000262	0.000271	2626.2	2539.6	10014298	9365479	11662203	0.040	791.3	0.001	-11.9
50	0.000274	0.000265	2532.8	2618.2	9238611	9872261	11628418	0.044	789.0	0.001	-11.9
70	0.000280	0.000268	2527.2	2639.5	9022108	9841923	11662203	0.040	791.3	0.001	-11.9
80	0.000277	0.000259	2513.1	2686.4	9068304	10361806	11728395	0.042	795.7	0.001	-11.9
90	0.000274	0.000274	2596.9	2596.9	9472351	9472351	11728395	0.041	795.7	0.001	-11.9
100	0.000274	0.000283	2639.2	2555.8	9626799	9028313	11728395	0.039	795.7	0.001	-11.9
200	0.000274	0.000256	2554.9	2733.1	9319282	10665186	11927661	0.040	809.3	0.001	-11.8
300	0.000265	0.000280	2745.5	2599.4	10351464	9279961	12060734	0.034	818.3	0.001	-11.8
400	0.000277	0.000268	2656.3	2744.8	9584740	10234249	12193808	0.040	827.3	0.001	-11.7
500	0.000286	0.000295	2757.0	2673.4	9637142	9062099	12260000	0.048	831.8	0.002	-11.8
600	0.000289	0.000292	2758.1	2730.0	9541991	9348241	12393073	0.054	840.9	0.001	-12.0
700	0.000274	0.000283	2811.2	2722.4	10254244	9616457	12492361	0.051	847.6	0.001	-12.0
800	0.000295	0.000280	2724.9	2869.8	9236542	10245281	12625435	0.043	856.6	0.001	-11.9
900	0.000292	0.000292	2802.8	2802.8	9597840	9597840	12658531	0.047	858.9	0.001	-11.9
1000	0.000289	0.000286	2817.6	2847.0	9748151	9952243	12791604	0.044	867.9	0.001	-11.8
2000	0.000295	0.000274	2845.7	3062.2	9646105	11169900	13323209	0.058	904.0	0.001	-12.0
3000	0.000289	0.000307	3117.0	2935.5	10783780	9564055	13655548	0.052	926.5	0.001	-12.2
4000	0.000289	0.000280	3027.5	3124.1	10473505	11153352	13887909	0.047	942.3	0.001	-12.0
5000	0.000298	0.000295	3096.3	3127.5	10390076	10601063	14054079	0.052	953.6	0.001	-12.1
6000	0.000310	0.000307	3126.1	3156.5	10087385	10283693	14187152	0.055	962.6	0.002	-12.1
7000	0.000298	0.000304	3202.4	3139.6	10746547	10329400	14320226	0.053	971.6	0.001	-11.9
8000	0.000295	0.000286	3115.4	3212.7	10560382	11230576	14286440	0.052	969.3	0.001	-12.0
9000	0.000301	0.000289	3129.5	3258.6	10398350	11273325	14419514	0.062	978.4	0.001	-11.9
10000	0.000301	0.000283	3112.2	3308.7	10340432	11687715	14486395	0.062	982.9	0.001	-12.1
20000	0.000310	0.000301	3277.2	3374.6	10574862	11211960	15017310	0.065	1019.0	0.001	-12.0
30000	0.000307	0.000298	3305.7	3404.9	10769990	11426394	15150384	0.066	1028.0	0.001	-11.7
66455	0.000316	0.000304	3334.6	3465.4	10556935	11400883	15349649	0.072	1041.5	0.001	-11.9
70000	0.000328	0.000289	3197.9	3626.4	9755736	12546142	15349649	0.078	1041.5	0.001	-11.8
80000	0.000328	0.000277	3136.1	3709.4	9567502	13384574	15349649	0.078	1041.5	0.001	-11.9
90000	0.000328	0.000295	3242.7	3603.1	9892946	12213114	15416531	0.082	1046.0	0.001	-12.1
100000	0.000325	0.000298	3265.5	3559.3	10053600	11944209	15383435	0.084	1043.7	0.001	-12.0
150000	0.000322	0.000280	3068.3	3525.3	9533717	12585444	14818045	0.082	1005.4	0.001	-12.0
200000	0.000286	0.000256	2859.1	3191.6	9994303	12453749	13622452	0.072	924.3	0.002	-12.1
250000	0.000265	0.000238	2633.2	2929.4	9928800	12288269	12525457	0.066	849.9	0.002	-11.9
300000	0.000244	0.000212	2381.5	2750.5	9746083	12999833	11529130	0.051	782.3	0.002	-12.1
344730	0.000223	0.000191	2195.1	2572.4	9821928	13487999	10698282	0.037	725.9	0.001	-12.2
400000	0.000194	0.000182	2117.7	2256.5	10932712	12413758	9868124	0.037	669.5	0.002	-9.7
440370	0.000185	0.000179	2106.2	2176.4	11400193	12172433	9668169	0.041	656.0	0.002	-12.0
500000	0.000173	0.000143	1801.6	2176.9	10423861	15219334	8904203	0.029	604.1	0.002	-11.7
575560	0.000158	0.000134	1720.7	2026.6	10895479	15113151	8405695	0.024	570.4	0.001	-12.0
600000	0.000152	0.000140	1752.8	1902.1	11533956	13580392	8239525	0.020	559.1	0.002	-12.0
667690	0.000131	0.000140	1810.6	1695.0	13808617	12102104	7907186	0.020	536.5	0.002	-12.1
684220	0.000134	0.000131	1716.9	1755.9	12803326	13391469	7840994	0.017	532.0	0.002	-12.1

Filename : RF4330
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 4.925 Beam depth (cm) : 4.928 Bulk density (KN/m^3) : 23.11 Deflection (mm) : 0.2108

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000513	0.000498	5879.5	6055.5	11471212	12168296	17754625	0.276	1873.3	0.002	-12.6
13	0.000516	0.000480	5613.8	6032.2	10889274	12573033	17305761	0.254	1826.0	0.002	-12.6
20	0.000510	0.000459	5499.0	6106.1	10791365	13305971	17220263	0.249	1817.0	0.002	-12.6
30	0.000510	0.000453	5451.7	6133.1	10698972	13540401	17177514	0.238	1812.4	0.001	-12.6
40	0.000513	0.000447	5383.1	6172.5	10502464	13809306	17113390	0.242	1805.7	0.001	-12.6
50	0.000524	0.000438	5263.8	6302.3	10036362	14387107	17070641	0.244	1801.2	0.001	-12.6
60	0.000519	0.000456	5376.8	6114.8	10370080	13411465	17027892	0.253	1796.7	0.002	-12.6
70	0.000519	0.000453	5367.1	6143.9	10350774	13564534	17049267	0.241	1799.0	0.001	-12.6
80	0.000521	0.000450	5349.8	6200.1	10259071	13778968	17092016	0.234	1803.5	0.001	-12.6
90	0.000510	0.000456	5434.6	6073.9	10665186	13321830	17070641	0.251	1801.2	0.001	-12.6
100	0.000519	0.000459	5406.8	6109.0	10427309	13312177	17070641	0.247	1801.2	0.001	-12.7
200	0.000519	0.000447	5280.7	6125.6	10184605	13704502	16878271	0.249	1780.9	0.002	-12.7
300	0.000527	0.000456	5253.9	6078.0	9961207	13330793	16771398	0.264	1769.6	0.002	-12.7
400	0.000519	0.000447	5207.2	6040.3	10042568	13513511	16643151	0.268	1756.1	0.002	-12.6
500	0.000519	0.000444	5191.1	6062.1	10011540	13652790	16643151	0.271	1756.1	0.002	-12.6
600	0.000533	0.000462	5184.4	5987.2	9719192	12962600	16536279	0.282	1744.8	0.002	-12.5
700	0.000521	0.000450	5175.9	5998.6	9925353	13331483	16536279	0.278	1744.8	0.002	-12.4
800	0.000539	0.000450	5056.9	6061.6	9375821	13471451	16408032	0.280	1731.3	0.002	-12.3
900	0.000536	0.000450	5069.7	6043.4	9451666	13430771	16408032	0.278	1731.3	0.002	-12.1
1000	0.000533	0.000450	5049.6	5985.9	9466835	13303213	16301849	0.291	1720.0	0.002	-12.0
2000	0.000542	0.000453	4954.1	5931.8	9134496	13096363	16066729	0.309	1695.2	0.002	-12.4
3000	0.000569	0.000465	4819.5	5900.9	8467750	12693695	15788861	0.332	1665.9	0.002	-12.7
4000	0.000593	0.000471	4656.1	5864.3	7852026	12455128	15446869	0.365	1629.9	0.002	-12.5
5000	0.000623	0.000459	4439.2	6024.6	7128051	13128080	15211749	0.393	1605.1	0.002	-12.0
6000	0.000641	0.000468	4354.0	5962.5	6795919	12744718	14976630	0.384	1580.3	0.002	-12.4
7000	0.000656	0.000474	4310.4	5964.0	6574934	12587512	14891132	0.402	1571.3	0.002	-12.6
8000	0.000679	0.000468	4176.5	6065.3	6147168	12963979	14720825	0.429	1553.2	0.002	-12.6
9000	0.000697	0.000480	4114.5	5980.1	5900603	12464781	14507080	0.424	1530.7	0.002	-12.0
10000	0.000709	0.000483	4090.5	6009.5	5767668	12448923	14485706	0.436	1528.4	0.002	-12.2
20000	0.000802	0.000495	3651.4	5916.9	4555113	11961446	13438355	0.468	1417.9	0.002	-12.5
30000	0.000876	0.000504	3369.4	5861.5	3845893	11638760	12733686	0.492	1343.6	0.002	-12.4
39802	0.000909	0.000513	3155.2	5594.9	3471495	10916164	12006953	0.502	1266.9	0.002	-12.2
40000	0.000918	0.000521	3163.7	5568.2	3447017	10677597	12006953	0.494	1266.9	0.002	-12.6
50000	0.000921	0.000524	3003.2	5272.6	3261473	10053600	11387782	0.489	1201.5	0.002	-12.1
87658	0.000778	0.000462	2277.2	3834.5	2927893	8301580	8503604	0.344	897.2	0.003	-12.5
87673	0.000772	0.000486	2368.8	3764.0	3069240	7749291	8652536	0.347	913.0	0.003	-12.5
87688	0.000781	0.000465	2313.8	3886.0	2963609	8359498	8631161	0.350	910.7	0.003	-12.4
90000	0.000757	0.000462	2289.0	3751.1	3024216	8120931	8460855	0.340	892.7	0.003	-12.7
91292	0.000754	0.000474	2297.4	3655.6	3047245	7715505	8396731	0.316	886.0	0.002	-12.7
99419	0.000706	0.000438	2140.4	3450.9	3030697	7877538	7862369	0.276	829.6	0.002	-12.6
100000	0.000706	0.000471	2207.7	3311.6	3125986	7033590	7883743	0.298	831.8	0.003	-12.0

Filename : RG2332
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 4.623 Beam depth (cm) : 5.065 Bulk density (KN/m^3) : 23.24 Deflection (mm) : 0.2184

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000536	0.000501	6236.0	6681.5	11626349	13346652	18025599	0.251	2008.6	0.002	-12.5
10	0.000527	0.000507	6089.3	6340.1	11544988	12515115	17358163	0.227	1934.2	0.002	-12.5
20	0.000513	0.000492	6043.2	6299.6	11790450	12812289	17236811	0.214	1920.7	0.001	-12.5
30	0.000519	0.000507	6062.0	6204.7	11691162	12248278	17135454	0.213	1909.4	0.001	-12.5
40	0.000513	0.000492	5972.3	6225.6	11651861	12661978	17034787	0.222	1898.1	0.002	-12.5
50	0.000504	0.000516	6168.5	6025.9	12248968	11689094	17034787	0.224	1898.1	0.002	-12.5
60	0.000507	0.000495	5981.7	6125.8	11807688	12383420	16913435	0.219	1884.6	0.002	-12.5
70	0.000516	0.000492	5912.9	6199.6	11469833	12608887	16913435	0.225	1884.6	0.002	-12.5
80	0.000504	0.000492	5988.4	6133.6	11891117	12474434	16933431	0.223	1886.8	0.001	-12.5
90	0.000519	0.000489	5893.0	6252.4	11365718	12793673	16953426	0.211	1889.1	0.002	-12.5
100	0.000513	0.000486	5873.4	6197.7	11459490	12759887	16852759	0.229	1877.9	0.002	-12.4
200	0.000504	0.000501	5998.9	6034.6	11911802	12053839	16812079	0.229	1873.3	0.002	-12.4
300	0.000498	0.000513	6055.3	5879.3	12167607	11470522	16670731	0.228	1857.6	0.002	-12.5
400	0.000495	0.000480	5854.8	6036.6	11835957	12582686	16610055	0.243	1850.8	0.002	-12.5
500	0.000501	0.000498	5883.3	5918.5	11751838	11893186	16488014	0.241	1837.3	0.002	-12.5
600	0.000495	0.000495	5886.4	5886.4	11899391	11899391	16448023	0.237	1832.7	0.002	-12.4
700	0.000492	0.000492	5842.9	5842.9	11883533	11883533	16326671	0.236	1819.2	0.002	-12.4
800	0.000501	0.000498	5840.0	5875.0	11665651	11805619	16366662	0.244	1823.7	0.002	-12.4
900	0.000498	0.000486	5780.1	5922.0	11614628	12191739	16346666	0.245	1821.5	0.002	-12.4
1000	0.000495	0.000498	5831.4	5796.6	11788382	11647724	16245310	0.243	1810.2	0.002	-12.4
2000	0.000495	0.000501	5681.5	5613.8	11485691	11213339	15780587	0.255	1758.4	0.002	-12.5
3000	0.000498	0.000477	5337.7	5571.2	10725862	11684957	15233813	0.266	1697.5	0.002	-12.5
4000	0.000492	0.000492	5299.9	5299.9	10778954	10778954	14809081	0.257	1650.1	0.002	-12.2
5000	0.000492	0.000468	5008.9	5264.2	10187363	11251951	14343669	0.270	1598.3	0.002	-12.6
8000	0.000483	0.000429	4294.3	4831.1	8895240	11258156	12705417	0.254	1415.7	0.002	-12.5
9000	0.000453	0.000408	3930.2	4360.5	8676668	10681045	11551883	0.212	1287.2	0.002	-12.4
9363	0.000438	0.000399	3799.1	4167.8	8673221	10437651	11107156	0.179	1237.6	0.002	-12.6
10000	0.000387	0.000349	3329.1	3699.0	8593928	10609337	9791590	0.153	1091.1	0.002	-12.0
12103	0.000229	0.000203	1779.3	2014.8	7754117	9942590	5280329	0.053	588.4	0.002	-12.6

Filename : RG3333
Material : Asphalt Rubber Hot Mix, California

Beam width (cm) : Beam depth (cm) : Bulk density (KN/m^3) : 2 Deflection (mm) : 0.

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000653	0.000593	6120.3	6735.3	9377890	11358134	16716928	0.335	2042.4	0.002	-12.4
13	0.000629	0.000584	6007.6	6467.4	9554402	11073370	16237036	0.302	1983.8	0.001	-12.4
20	0.000626	0.000557	5821.0	6536.9	9302045	11731153	16052939	0.329	1961.2	0.002	-12.4
30	0.000626	0.000575	5881.8	6399.9	9399264	11127841	15979163	0.314	1952.2	0.002	-12.4
40	0.000635	0.000572	5834.5	6472.6	9192414	11312627	15997779	0.312	1954.5	0.001	-12.4
50	0.000626	0.000560	5755.2	6428.7	9196551	11475349	15831610	0.306	1934.2	0.002	-12.4
60	0.000626	0.000575	5834.3	6348.2	9323419	11038206	15849537	0.334	1936.5	0.002	-12.4
70	0.000620	0.000563	5823.0	6408.4	9394438	11378129	15905386	0.307	1943.2	0.001	-12.4
80	0.000632	0.000572	5786.8	6389.7	9160008	11167832	15831610	0.326	1934.2	0.002	-12.4
90	0.000623	0.000554	5725.7	6433.8	9193793	11607733	15794377	0.317	1929.7	0.002	-12.4
100	0.000623	0.000569	5791.5	6337.3	9299287	11134046	15775760	0.322	1927.4	0.002	-12.3
200	0.000620	0.000572	5778.5	6260.0	9322730	10940986	15665440	0.345	1913.9	0.002	-12.2
300	0.000623	0.000566	5722.9	6295.2	9188967	11118877	15628207	0.337	1909.4	0.002	-12.1
400	0.000635	0.000569	5659.0	6310.8	8915925	11087850	15554431	0.331	1900.4	0.002	-12.0
500	0.000623	0.000557	5626.3	6288.2	9033829	11284357	15480654	0.339	1891.4	0.002	-11.9
600	0.000638	0.000557	5491.2	6284.1	8611166	11276773	15277941	0.348	1866.6	0.002	-11.8
700	0.000623	0.000554	5551.9	6238.4	8914546	11255398	15314485	0.356	1871.1	0.002	-11.8
800	0.000641	0.000551	5465.3	6351.5	8530494	11521545	15314485	0.362	1871.1	0.002	-12.1
900	0.000638	0.000563	5505.3	6233.5	8633230	11067854	15240708	0.361	1862.1	0.002	-12.3
1000	0.000626	0.000548	5511.4	6290.2	8806984	11471901	15314485	0.369	1871.1	0.002	-12.4
2000	0.000653	0.000545	5314.3	6359.7	8142995	11662203	15093155	0.393	1844.0	0.002	-12.1
3000	0.000659	0.000551	5305.6	6338.0	8056118	11496723	15056612	0.407	1839.5	0.002	-12.5
4000	0.000676	0.000560	5131.1	6195.4	7585190	11058891	14631880	0.430	1787.7	0.002	-11.8
5000	0.000691	0.000548	5045.2	6361.4	7297668	11602217	14669113	0.453	1792.2	0.002	-12.3
6000	0.000709	0.000557	4942.3	6290.2	6968777	11287805	14429167	0.464	1762.9	0.002	-12.4
7000	0.000709	0.000563	4870.3	6133.0	6867075	10889274	14151988	0.475	1729.0	0.002	-11.9
8000	0.000736	0.000563	4785.5	6254.0	6501709	11104398	14134061	0.491	1726.8	0.002	-12.4
9000	0.000736	0.000551	4642.5	6198.4	6307477	11243677	13838955	0.511	1690.7	0.002	-12.3
10400	0.000751	0.000554	4521.4	6125.7	6020921	11051996	13561776	0.511	1656.9	0.002	-11.8
20000	0.000745	0.000545	3904.8	5334.4	5241441	9781937	11753907	0.457	1436.0	0.002	-12.4
25077	0.000653	0.000507	3583.3	4616.2	5490833	9112432	10517633	0.365	1284.9	0.002	-12.5
30000	0.000548	0.000465	3165.3	3733.4	5772908	8031296	8930404	0.264	1091.1	0.002	-12.6

Filename : RG4334

Material : Asphalt Rubber Hot Mix, California

Beam width (cm) : 4.737 Beam depth (cm) : 5.055 Bulk density (KN/m^3) : 23.27 Deflection (mm) : 0.2362

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000605	0.000524	6205.1	7157.0	10257692	13645895	17209920	0.351	2112.3	0.002	-12.0
13	0.000578	0.000536	6208.9	6691.9	10740342	12475813	16677626	0.282	2046.9	0.001	-12.0
20	0.000572	0.000521	6095.2	6687.3	10653465	12823321	16512146	0.293	2026.6	0.001	-12.0
30	0.000569	0.000539	6176.1	6517.3	10851351	12083488	16420443	0.285	2015.4	0.002	-12.0
40	0.000572	0.000536	6137.0	6546.1	10726552	12204150	16401826	0.273	2013.1	0.001	-12.0
50	0.000572	0.000527	6046.6	6559.0	10568656	12435822	16291506	0.275	1999.6	0.001	-12.0
60	0.000578	0.000533	6055.9	6563.4	10475574	12304817	16310123	0.267	2001.8	0.001	-12.0
70	0.000572	0.000536	6095.8	6502.1	10654154	12122100	16291506	0.287	1999.6	0.002	-12.0
80	0.000581	0.000521	5956.2	6637.0	10250107	12726791	16254963	0.277	1995.1	0.001	-12.0
90	0.000569	0.000533	6060.4	6466.7	10647949	12123479	16199803	0.282	1988.3	0.001	-12.0
100	0.000575	0.000533	6043.7	6516.4	10508670	12216561	16236346	0.271	1992.8	0.001	-12.3
200	0.000578	0.000524	5919.3	6524.7	10239075	12440649	16071556	0.280	1972.5	0.001	-12.5
300	0.000587	0.000530	5901.2	6531.1	10052221	12313091	16052939	0.288	1970.3	0.001	-12.6
400	0.000584	0.000524	5830.0	6492.5	9981892	12379283	15906076	0.286	1952.2	0.002	-12.6
500	0.000590	0.000527	5837.8	6530.4	9894325	12381352	15961236	0.285	1959.0	0.001	-12.7
600	0.000581	0.000527	5859.9	6455.8	10084627	12240004	15906076	0.297	1952.2	0.001	-12.7
700	0.000593	0.000533	5801.0	6449.2	9782626	12090383	15814372	0.292	1941.0	0.002	-12.8
800	0.000581	0.000524	5817.2	6445.1	10010851	12288959	15832299	0.310	1943.2	0.002	-12.7
900	0.000578	0.000527	5813.2	6371.5	10055668	12080040	15740596	0.310	1931.9	0.001	-12.7
1000	0.000581	0.000530	5794.2	6347.6	9971549	11966962	15685436	0.297	1925.2	0.001	-12.6
2000	0.000539	0.000516	5404.1	5654.0	10019125	10967187	14307815	0.232	1756.1	0.001	-12.6
2786	0.000495	0.000539	5375.5	4930.1	10867210	9140702	13316314	0.195	1634.4	0.001	-12.4
3000	0.000480	0.000516	5231.9	4868.9	10905132	9444771	13059130	0.178	1602.8	0.002	-12.2
4000	0.000420	0.000510	5086.0	4193.7	12104862	8229872	11902149	0.138	1460.8	0.002	-12.7
5000	0.000343	0.000468	4622.6	3386.0	13489378	7237682	10120481	0.078	1242.1	0.002	-11.9
5375	0.000304	0.000483	4783.1	3011.5	15736459	6238389	9569571	0.078	1174.5	0.002	-12.6
6000	0.000283	0.000450	4316.9	2715.9	15248982	6035883	8632540	0.068	1059.5	0.002	-12.6
7000	0.000238	0.000420	3988.1	2262.7	16728649	5385271	7475559	0.044	917.5	0.002	-12.6
8000	0.000212	0.000370	3516.8	2013.6	16621777	5449532	6630577	0.027	813.8	0.002	-12.2
9000	0.000191	0.000355	3336.8	1794.6	17496063	5060723	6042847	0.031	741.7	0.002	-12.7
10000	0.000179	0.000331	3073.2	1661.1	17187856	5022042	5583640	0.026	685.3	0.002	-12.3

Filename : RG5335
Material : Asphalt Rubber Hot Mix, California

Beam width (cm) : 4.633 Beam depth (cm) : 5.169 Bulk density (KN/m^3) : 23.13 Deflection (mm) : 0.2489

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000697	0.000790	6907.4	6099.5	9906047	7723779	15565463	0.462	2105.5	0.002	-12.6
11	0.000682	0.000718	6512.9	6188.7	9544059	8617371	15248982	0.392	2062.7	0.002	-12.6
21	0.000682	0.000718	6498.7	6175.2	9523374	8598755	15215886	0.392	2058.2	0.002	-12.6
33	0.000676	0.000763	6707.8	5947.9	9916389	7796866	15149005	0.380	2049.2	0.002	-12.6
40	0.000676	0.000712	6464.6	6140.0	9556470	8621508	15132457	0.384	2046.9	0.002	-12.6
50	0.000673	0.000727	6512.9	6032.4	9670927	8296754	15049027	0.393	2035.7	0.002	-12.6
60	0.000673	0.000715	6464.6	6087.5	9599219	8511878	15065575	0.392	2037.9	0.002	-12.6
70	0.000662	0.000781	6827.7	5785.3	10321126	7410057	15049027	0.383	2035.7	0.002	-12.6
80	0.000706	0.000781	6550.0	5924.9	9274465	7588637	14949050	0.436	2022.1	0.002	-12.6
90	0.000703	0.000805	6640.2	5804.1	9442013	7213549	14882168	0.454	2013.1	0.002	-12.6
100	0.000709	0.000781	6491.6	5897.2	9153113	7553473	14849072	0.464	2008.6	0.002	-12.5
200	0.000733	0.000784	6314.8	5906.6	8614613	7536925	14665665	0.532	1983.8	0.002	-12.4
300	0.000796	0.000799	6038.9	6016.4	7590016	7533477	14482258	0.643	1959.0	0.002	-12.3
400	0.000849	0.000805	5754.2	6073.9	6775372	7549336	14198874	0.714	1920.7	0.003	-12.3
500	0.000963	0.000790	5246.5	6394.8	5450842	8098178	13849297	0.884	1873.3	0.003	-12.1
600	0.001052	0.000814	5043.2	6521.1	4794369	8016127	13665890	1.007	1848.5	0.003	-12.0
700	0.001118	0.000808	4851.3	6713.0	4341299	8312612	13532127	1.068	1830.5	0.003	-11.9
800	0.001153	0.000873	4887.2	6455.2	4237943	7393509	13365958	1.089	1807.9	0.003	-11.8
900	0.001186	0.000876	4787.8	6481.5	4036954	7398335	13232195	1.124	1789.9	0.003	-11.7
1000	0.001243	0.000897	4729.4	6552.0	3805971	7304563	13199099	1.159	1785.4	0.003	-11.6
1500	0.001705	0.000912	3763.7	7035.7	2208055	7715505	11782866	1.944	1593.8	0.004	-12.6
2000	0.002456	0.000989	2797.6	6943.3	1139330	7018421	9582671	2.866	1296.2	0.005	-12.2
3000	0.003892	0.001165	1568.3	5238.1	402964	4495678	5799660	3.930	784.5	0.006	-12.5
3431	0.004205	0.001126	1310.4	4891.4	311647	4342471	4966331	3.784	671.8	0.006	-12.4
3702	0.004360	0.001135	1241.4	4767.1	284764	4198779	4733004	3.672	640.2	0.006	-12.1
3892	0.004452	0.001183	1180.8	4443.8	265237	3756258	4483060	3.595	606.4	0.006	-11.9
4000	0.004485	0.001115	1112.8	4478.0	248130	4017992	4283036	3.546	579.3	0.006	-11.8
4306	0.004628	0.001129	1039.8	4260.7	224687	3772530	4016406	3.454	543.3	0.006	-12.0

Filename : RG7325
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 5.174 Beam depth (cm) : 5.057 Bulk density (KN/m^3) : 23.24 Deflection (mm) : 0.1684

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000420	0.000399	5112.6	5379.6	12167607	13472141	19030890	0.175	1821.5	0.002	-12.2
13	0.000405	0.000381	4956.3	5266.1	12229662	13805859	18536518	0.151	1774.1	0.001	-12.2
20	0.000402	0.000378	4911.1	5220.4	12207598	13794137	18371038	0.141	1758.4	0.001	-12.2
30	0.000387	0.000375	4964.0	5121.6	12814358	13640379	18300709	0.156	1751.6	0.001	-12.2
40	0.000399	0.000378	4878.3	5147.2	12216561	13600388	18182805	0.147	1740.3	0.001	-12.2
50	0.000393	0.000378	4907.9	5101.1	12477192	13479036	18159362	0.141	1738.1	0.001	-12.2
60	0.000387	0.000387	5002.7	5002.7	12913646	12913646	18159362	0.137	1738.1	0.001	-12.2
70	0.000402	0.000384	4859.7	5085.8	12080040	13230126	18041457	0.148	1726.8	0.001	-12.2
80	0.000393	0.000372	4851.0	5122.7	12332397	13752767	18089033	0.154	1731.3	0.001	-12.2
90	0.000390	0.000378	4900.7	5055.1	12553727	13356994	18064900	0.142	1729.0	0.001	-12.2
100	0.000402	0.000399	4951.8	4988.7	12308954	12493740	18041457	0.147	1726.8	0.001	-12.4
200	0.000390	0.000411	5056.4	4799.9	12952947	11671856	17876667	0.148	1711.0	0.001	-12.5
300	0.000384	0.000367	4829.3	5064.9	12562690	13818270	17947685	0.151	1717.8	0.001	-12.6
400	0.000396	0.000381	4819.5	5007.7	12160022	13128770	17829781	0.164	1706.5	0.002	-12.7
500	0.000384	0.000378	4886.6	4963.6	12712312	13115669	17876667	0.156	1711.0	0.001	-12.7
600	0.000384	0.000399	5007.0	4820.2	13025345	12071077	17829781	0.158	1706.5	0.002	-12.7
700	0.000399	0.000390	4869.7	4981.2	12195187	12759887	17876667	0.151	1711.0	0.002	-12.6
800	0.000393	0.000381	4824.6	4975.4	12265516	13043961	17782205	0.161	1702.0	0.002	-12.5
900	0.000393	0.000367	4750.6	5098.2	12077282	13909284	17853224	0.154	1708.8	0.001	-12.5
1000	0.000393	0.000378	4818.8	5008.5	12250347	13234263	17829781	0.146	1706.5	0.001	-12.4
2000	0.000384	0.000364	4715.4	4986.0	12266895	13714845	17593972	0.159	1684.0	0.002	-12.6
3000	0.000387	0.000384	4815.3	4852.7	12430306	12624056	17547086	0.159	1679.5	0.001	-12.2
4000	0.000381	0.000387	4865.2	4790.3	12755061	12365493	17523643	0.167	1677.2	0.001	-12.7
5000	0.000399	0.000384	4673.7	4854.8	11704263	12629572	17287834	0.164	1654.6	0.002	-12.0
6000	0.000384	0.000375	4726.5	4839.0	12295164	12887445	17358852	0.169	1661.4	0.002	-12.7
7000	0.000402	0.000384	4599.7	4813.5	11433979	12522010	17076157	0.171	1634.4	0.002	-11.9
8000	0.000402	0.000378	4596.3	4885.8	11425015	12910198	17193372	0.166	1645.7	0.002	-12.5
9000	0.000396	0.000384	4601.4	4744.2	11610491	12341361	16958253	0.167	1623.1	0.002	-12.4
10000	0.000387	0.000393	4733.8	4662.1	12220009	11852505	17052714	0.164	1632.1	0.002	-12.4
20000	0.000375	0.000384	4563.2	4457.1	12153127	11594632	16369420	0.158	1566.8	0.002	-12.6
30000	0.000334	0.000396	4620.0	3890.6	13842402	9816412	15333101	0.119	1467.6	0.002	-12.2
40000	0.000310	0.000405	4701.7	3595.4	15171069	8871797	14791154	0.100	1415.7	0.002	-12.6
50000	0.000283	0.000420	4747.0	3198.3	16768640	7612080	13872740	0.093	1327.8	0.002	-12.7
60000	0.000229	0.000423	4825.8	2616.8	21031819	6184126	12317918	0.042	1179.0	0.002	-12.1
70000	0.000152	0.000432	5323.9	1872.5	35031427	4333714	10057047	0.017	962.6	0.002	-12.1
80000	0.000128	0.000435	4705.7	1385.9	36724149	3185490	7772734	0.017	743.9	0.002	-12.4
90000	0.000095	0.000405	4615.8	1086.0	48404969	2679880	6382839	0.015	610.9	0.003	-12.6

Filename : RJ6330
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 4.864 Beam depth (cm) : 4.961 Bulk density (KN/m^3) : 23.45 Deflection (mm) : 0.1867

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000343	0.000370	6156.8	5710.0	17966302	15453074	19778308	0.103	1862.1	0.000	-29.0
11	0.000322	0.000398	6311.7	5106.0	19611449	12835043	18844035	0.118	1774.1	0.000	-29.0
20	0.000302	0.000396	6421.7	4900.8	21231774	12365493	18556514	0.177	1747.1	0.000	-29.0
30	0.000326	0.000368	5845.9	5183.1	17915279	14083727	18341390	0.123	1726.8	0.000	-29.0
40	0.000316	0.000389	6121.6	4972.3	19379777	12786088	18317257	0.152	1724.6	0.001	-29.0
50	0.000358	0.000362	5500.1	5432.2	15380677	15003520	18245549	0.090	1717.8	0.001	-29.0
60	0.000320	0.000375	5944.0	5071.3	18555135	13506616	18269682	0.141	1720.0	0.000	-29.0
70	0.000325	0.000396	6075.6	4979.2	18704756	12563380	18269682	0.118	1720.0	0.000	-29.0
80	0.000329	0.000378	5897.1	5130.9	17909073	13557639	18317257	0.066	1724.6	0.000	-29.0
90	0.000316	0.000335	5648.2	5321.9	17881493	15875048	18293125	0.082	1722.3	0.000	-29.0
100	0.000304	0.000381	6162.5	4910.8	20274748	12874344	18245549	0.088	1717.8	0.000	-29.0
200	0.000317	0.000396	6097.5	4882.6	19212918	12319297	18102133	0.167	1704.3	0.000	-29.0
300	0.000325	0.000346	5574.7	5238.3	17163034	15154521	18029736	0.106	1697.5	0.000	-29.0
400	0.000305	0.000341	5702.3	5104.7	18668902	14960771	17982160	0.078	1693.0	0.000	-29.0
500	0.000347	0.000295	4982.4	5863.1	14351943	19874148	17982160	0.072	1693.0	0.000	-29.0
600	0.000294	0.000375	6130.8	4792.7	20887024	12764714	17958028	0.140	1690.7	0.000	-29.0
700	0.000288	0.000377	6207.8	4735.6	21587556	12562690	17934585	0.094	1688.5	0.000	-28.9
800	0.000304	0.000343	5715.0	5068.9	18802665	14791844	17934585	0.109	1688.5	0.000	-29.0
900	0.000304	0.000340	5665.9	5069.5	18640633	14922849	17862187	0.109	1681.7	0.000	-29.0
1000	0.000291	0.000352	5905.7	4879.7	20326460	13877567	17838744	0.091	1679.5	0.000	-29.0
2000	0.000308	0.000337	5529.2	5064.3	17927000	15039374	17647063	0.091	1661.4	0.000	-29.0
3000	0.000283	0.000364	5996.9	4669.6	21183509	12844696	17527090	0.075	1650.1	0.000	-28.8
4000	0.000292	0.000328	5557.0	4950.7	19028821	15103498	17479515	0.068	1645.7	0.000	-28.9
5000	0.000283	0.000329	5655.8	4862.4	19978263	14767022	17455382	0.092	1643.4	0.000	-28.8
6000	0.000291	0.000338	5650.5	4853.9	19448037	14351253	17431250	0.080	1641.1	0.000	-28.9
7000	0.000291	0.000331	5598.9	4917.9	19270146	14868378	17479515	0.070	1645.7	0.000	-28.8
8000	0.000288	0.000334	5633.6	4853.9	19590764	14543624	17407807	0.091	1638.9	0.000	-28.8
9000	0.000279	0.000349	5870.1	4691.1	21068362	13454903	17407807	0.077	1638.9	0.000	-28.8
10000	0.000271	0.000372	6180.5	4499.4	22792112	12079351	17383674	0.106	1636.6	0.000	-28.8
20000	0.000271	0.000355	5950.9	4550.7	21944717	12832974	17216126	0.132	1620.9	0.000	-29.0
30000	0.000250	0.000358	6219.1	4353.4	24845443	12173812	17096153	0.077	1609.6	0.000	-28.9
40000	0.000235	0.000367	6492.8	4170.2	27580690	11377440	16952737	0.105	1596.0	0.000	-28.9
50000	0.000231	0.000361	6457.9	4136.2	27962673	11471212	16832764	0.107	1584.8	0.000	-29.0
60000	0.000231	0.000325	6015.7	4277.2	26048621	13168071	16689348	0.101	1571.3	0.000	-29.0
70000	0.000229	0.000365	6430.3	4041.9	28024728	11072681	16569375	0.096	1560.0	0.000	-28.9
80000	0.000218	0.000349	6450.3	4024.6	29651948	11543609	16545242	0.084	1557.7	0.000	-28.9
90000	0.000226	0.000326	6022.7	4180.2	26593326	12810910	16473534	0.084	1551.0	0.000	-28.9
100000	0.000212	0.000323	6193.0	4052.5	29271344	12534421	16354251	0.084	1539.7	0.000	-28.8
200000	0.000201	0.000308	5833.2	3804.2	28999681	12334466	15372403	0.089	1447.3	0.000	-28.9
300000	0.000176	0.000261	5254.3	3542.9	29884999	13587977	14127166	0.055	1330.1	0.000	-28.9
400000	0.000164	0.000189	3871.4	3353.2	23620891	17720840	11995921	0.043	1129.4	0.000	-28.9
418600	0.000159	0.000177	3674.0	3303.5	23045159	18631669	11613249	0.035	1093.3	0.000	-28.8

Filename : RK2335
Material : Asphalt Rubber Hot Mix, California

Beam width (cm) : 4.905			Beam depth (cm) : 5.001	
Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)
1	0.000520	0.000699	7455.6	5547.8
13	0.000521	0.000715	7335.6	5348.9
20	0.000530	0.000709	7131.5	5333.4
30	0.000527	0.000708	7063.9	5264.3
40	0.000538	0.000708	6928.8	5265.6
50	0.000533	0.000726	7045.3	5179.0
60	0.000529	0.000724	6979.8	5098.6
70	0.000532	0.000733	6981.9	5066.2
80	0.000539	0.000711	6780.1	5145.5
90	0.000527	0.000733	6966.0	5012.2
100	0.000536	0.000720	6801.1	5069.1
200	0.000538	0.000746	6768.0	4876.8
300	0.000539	0.000760	6701.2	4756.5
400	0.000551	0.000742	6435.9	4781.7
500	0.000550	0.000749	6375.6	4677.1
600	0.000548	0.000760	6361.7	4590.4
700	0.000551	0.000767	6277.3	4510.0
800	0.000556	0.000766	6191.0	4492.7
900	0.000557	0.000767	6071.9	4409.6
1000	0.000547	0.000770	6161.4	4373.8
2000	0.000566	0.000785	5721.2	4125.3
3000	0.000544	0.000794	5699.2	3902.8
4000	0.000538	0.000817	5612.7	3697.4
5000	0.000520	0.000831	5620.1	3515.1
6000	0.000519	0.000836	5484.1	3401.9
7000	0.000507	0.000845	5451.5	3269.0
8000	0.000517	0.000840	5218.1	3210.4
9000	0.000508	0.000864	5254.7	3089.4
10000	0.000526	0.000875	5069.1	3048.3
20000	0.000501	0.000897	4532.7	2529.8
30000	0.000507	0.000916	4216.6	2331.1
40000	0.000477	0.000928	4176.3	2145.1
50000	0.000462	0.000942	4083.2	2002.8
60000	0.000423	0.000949	4210.1	1877.0
70000	0.000307	0.000968	5278.2	1672.8

Bulk density (KN/m^3) : 23.03 Deflection (mm) : 0.2210

Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
14337463	7938903	17794616	0.206	2049.2	0.001	-29.0
14066490	7479007	17305071	0.196	1992.8	0.001	-29.0
13444561	7520377	17070641	0.212	1965.7	0.001	-29.0
13392159	7438326	16874823	0.207	1943.2	0.001	-29.0
12881239	7440395	16737613	0.215	1927.4	0.001	-29.0
13208062	7137704	16698311	0.216	1922.9	0.001	-29.0
13196341	7041174	16483187	0.221	1898.1	0.001	-29.0
13126012	6910859	16424580	0.223	1891.4	0.001	-29.0
12570275	7239750	16365283	0.216	1884.6	0.001	-29.0
13207373	6837289	16306675	0.216	1877.9	0.001	-29.0
12679216	7043932	16248068	0.216	1871.1	0.001	-29.0
12582686	6533081	15856432	0.235	1826.0	0.001	-29.0
12424101	6259557	15562705	0.252	1792.2	0.001	-29.0
11674614	6444343	15347581	0.266	1767.4	0.001	-29.0
11596011	6240733	15093155	0.278	1738.1	0.001	-29.0
11602906	6040985	14917333	0.258	1717.8	0.001	-29.0
11387093	5877505	14682213	0.271	1690.7	0.001	-29.0
11139562	5866404	14564309	0.273	1677.2	0.001	-29.0
10896169	5746569	14290577	0.280	1645.7	0.002	-29.0
11267809	5677895	14309883	0.292	1647.9	0.001	-29.0
10104623	5253852	13409396	0.293	1544.2	0.002	-28.9
10479711	4914549	12959153	0.256	1492.4	0.001	-29.0
10434893	4528360	12470297	0.247	1436.0	0.002	-29.0
10807913	4227945	12097967	0.247	1393.2	0.002	-29.0
10576930	4069981	11745633	0.250	1352.6	0.002	-29.0
10761027	3869474	11432600	0.254	1316.5	0.002	-29.0
10092901	3820382	11119567	0.253	1280.4	0.002	-29.0
10342500	3575058	10884447	0.262	1253.4	0.002	-29.1
9637831	3485423	10649328	0.260	1226.3	0.002	-29.1
9053825	2820538	9083473	0.277	1046.0	0.002	-29.1
8323644	2543979	8398110	0.285	967.1	0.002	-29.1
8759408	2310928	7928561	0.270	913.0	0.002	-29.1
8840080	2126901	7516929	0.230	865.7	0.002	-29.1
9949485	1977693	7262504	0.213	836.3	0.002	-29.1
17196820	1727266	7105987	0.129	818.3	0.001	-29.1

Filename : RK3340
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 4.976 Beam depth (cm) : 5.004 Bulk density (KN/m^3) : 23.48 Deflection (mm) : 0.2240

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000508	0.000511	9966.7	9908.8	19616275	19388051	27404867	0.150	3250.7	0.000	-29.1
13	0.000481	0.000483	9593.7	9564.1	19935514	19812093	26416814	0.309	3133.5	0.000	-29.1
20	0.000480	0.000471	9366.9	9544.7	19523882	20272679	26074822	0.292	3092.9	0.000	-29.1
30	0.000478	0.000472	9293.8	9411.0	19430800	19924482	25789369	0.290	3059.1	0.000	-29.1
40	0.000481	0.000463	9144.1	9497.2	19000552	20495388	25694218	0.271	3047.8	0.000	-29.1
50	0.000484	0.000469	9160.0	9451.0	18917122	20137537	25656295	0.299	3043.3	0.000	-29.1
60	0.000484	0.000466	9104.8	9453.7	18801976	20271300	25580450	0.281	3034.3	0.000	-29.1
70	0.000471	0.000450	9036.6	9455.8	19193612	21013892	25485299	0.293	3023.0	0.000	-29.1
80	0.000466	0.000468	9249.6	9220.0	19833468	19707289	25466683	0.275	3020.7	0.000	-29.1
90	0.000477	0.000469	9155.9	9300.7	19202575	19816920	25447377	0.292	3018.5	0.000	-29.1
100	0.000466	0.000453	9081.4	9350.3	19472859	20642941	25409454	0.281	3014.0	0.000	-29.1
200	0.000472	0.000460	9036.6	9270.3	19132246	20135469	25238458	0.254	2993.7	0.000	-29.1
300	0.000475	0.000459	8933.2	9252.4	18795081	20160980	25067462	0.249	2973.4	0.000	-29.1
400	0.000471	0.000448	8820.1	9260.0	18733715	20647078	24915083	0.235	2955.4	0.000	-29.1
500	0.000474	0.000462	8860.1	9088.3	18699240	19676951	24744087	0.223	2935.1	0.000	-29.1
600	0.000468	0.000451	8768.4	9086.2	18741300	20127195	24611013	0.261	2919.3	0.000	-29.1
700	0.000472	0.000448	8658.7	9119.3	18333116	20333355	24497246	0.248	2905.8	0.000	-29.1
800	0.000462	0.000448	8713.2	8973.8	18864720	20009980	24383478	0.265	2892.3	0.000	-29.1
900	0.000478	0.000453	8587.7	9067.6	17955270	20019633	24326250	0.245	2885.5	0.000	-29.1
1000	0.000469	0.000441	8501.5	9047.6	18113855	20514004	24173870	0.237	2867.5	0.000	-29.1
2000	0.000314	0.000322	5948.0	5810.3	18919880	18053868	16210835	0.144	1922.9	0.000	-29.1
3000	0.000222	0.000221	3770.7	3796.2	16985143	17215436	10433514	0.104	1237.6	0.000	-29.0
3858	0.000200	0.000207	3643.4	3512.3	18248307	16959632	9863298	0.081	1170.0	0.000	-29.0

Filename : RK4337
Material : Asphalt Rubber Hot Mix, California

Beam width (cm) : 4.935 Beam depth (cm) : 5.014 Bulk density (KN/m^3) : 23.47 Deflection (mm) : 0.2210

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000524	0.000495	8902.1	9437.9	16973422	19079844	25563213	0.372	2984.7	0.000	-29.3
13	0.000457	0.000456	8352.6	8380.2	18260718	18380002	23343023	0.233	2725.4	0.000	-29.3
20	0.000451	0.000448	8304.3	8359.5	18394481	18639943	23246493	0.168	2714.2	0.000	-29.3
30	0.000444	0.000448	8367.1	8283.7	18844035	18470326	23227187	0.293	2711.9	0.000	-29.3
40	0.000437	0.000441	8458.1	8371.9	19374261	18983314	23478165	0.349	2741.2	0.000	-29.3
50	0.000432	0.000454	8490.5	8072.7	19650061	17764278	23092045	0.286	2696.2	0.000	-29.3
60	0.000417	0.000446	8514.6	7973.4	20408511	17897352	22976209	0.322	2682.6	0.000	-29.3
70	0.000416	0.000448	8523.6	7900.3	20504351	17616725	22879679	0.280	2671.3	0.000	-29.3
80	0.000435	0.000438	8214.7	8158.9	18881268	18624774	22841067	0.308	2666.8	0.000	-29.3
90	0.000428	0.000447	8343.6	7982.3	19511471	17857361	22763843	0.320	2657.8	0.000	-29.3
100	0.000407	0.000438	8458.1	7854.1	20793941	17929758	22725231	0.362	2653.3	0.000	-29.2
200	0.000405	0.000441	8352.6	7675.5	20609845	17402980	22319805	0.326	2606.0	0.000	-29.2
300	0.000389	0.000434	8415.3	7548.0	21639958	17408496	22203969	0.344	2592.4	0.000	-29.2
400	0.000375	0.000429	8437.4	7383.2	22472184	17205094	21972297	0.339	2565.4	0.000	-29.2
500	0.000413	0.000440	8066.5	7574.2	19545257	17232674	21798543	0.299	2545.1	0.000	-29.2
600	0.000401	0.000447	8167.8	7323.9	20378862	16384589	21547565	0.239	2515.8	0.000	-29.2
700	0.000414	0.000451	8005.1	7344.6	19325996	16268753	21373811	0.261	2495.5	0.000	-29.2
800	0.000393	0.000462	8290.5	7060.5	21075947	15285526	21277281	0.328	2484.3	0.000	-29.3
900	0.000405	0.000451	8045.8	7222.5	19853463	15998469	21238669	0.337	2479.7	0.000	-29.2
1000	0.000404	0.000440	7891.3	7249.4	19543878	16492840	21084221	0.297	2461.7	0.000	-29.2
2000	0.000381	0.000444	7622.4	6548.2	19983779	14747716	19655577	0.235	2294.9	0.000	-29.3
3000	0.000325	0.000404	6814.4	5481.7	20979417	13576255	16952047	0.198	1979.3	0.000	-29.2
4000	0.000259	0.000335	5284.2	4086.5	20382310	12189671	12859175	0.135	1501.4	0.000	-29.2
5000	0.000240	0.000322	4918.0	3665.7	20501593	11389851	11720121	0.115	1368.4	0.000	-29.3
6000	0.000237	0.000310	4592.1	3510.4	19383914	11327106	11101640	0.099	1296.2	0.000	-29.2
7000	0.000243	0.000302	4296.3	3449.8	17690502	11405709	10676908	0.098	1246.6	0.000	-29.2
8000	0.000237	0.000291	4121.3	3360.5	17396775	11566363	10329400	0.120	1206.0	0.000	-29.2
9000	0.000198	0.000295	4495.0	3019.4	22683171	10234938	10078422	0.130	1176.8	0.000	-29.2
10000	0.000218	0.000282	4064.8	3140.1	18686140	11150594	9885362	0.091	1154.2	0.000	-29.2

Filename : RL1337
Material : Asphalt Rubber Hot Mix, California

Beam width (cm) : 5.042 Beam depth (cm) : 5.070 Bulk density (KN/m^3) : 23.43 Deflection (mm) : 0.2210

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000374	0.000521	9676.4	6939.8	25874867	13307350	22303257	0.151	2750.2	0.000	-28.8
13	0.000372	0.000498	9293.8	6956.4	24949558	13978234	21955749	0.173	2707.4	0.000	-28.8
20	0.000370	0.000505	9511.0	6957.7	25739035	13774831	22175010	0.165	2734.5	0.000	-28.8
30	0.000362	0.000504	9639.2	6929.5	26622285	13760352	22248097	0.184	2743.5	0.000	-28.8
40	0.000368	0.000514	9749.5	6980.5	26491969	13579013	22449431	0.192	2768.3	0.000	-28.8
50	0.000364	0.000501	9701.3	7044.6	26684340	14072006	22522518	0.170	2777.3	0.000	-28.8
60	0.000386	0.000496	9343.4	7267.3	24211793	14647049	22559061	0.202	2781.8	0.000	-28.8
70	0.000387	0.000493	9329.6	7328.0	24082856	14859415	22650075	0.198	2793.1	0.000	-28.8
80	0.000381	0.000511	9673.0	7219.8	25360500	14127166	22814866	0.167	2813.4	0.000	-28.8
90	0.000386	0.000502	9528.2	7323.2	24691685	14584304	22851409	0.169	2817.9	0.000	-28.8
100	0.000377	0.000508	9729.5	7218.4	25810743	14207837	22870026	0.174	2820.1	0.000	-28.7
200	0.000384	0.000511	9846.1	7405.9	25614236	14491911	23326475	0.143	2876.5	0.000	-28.7
300	0.000399	0.000524	9770.9	7439.0	24469666	14184394	23308548	0.139	2874.3	0.000	-28.8
400	0.000396	0.000508	9622.7	7506.6	24280053	14773917	23272004	0.140	2869.7	0.000	-28.8
500	0.000395	0.000544	10025.3	7278.4	25390148	13383885	23272004	0.191	2869.7	0.000	-28.9
600	0.000393	0.000530	10028.1	7436.3	25493573	14019604	23564352	0.181	2905.8	0.000	-28.9
700	0.000398	0.000519	9888.8	7587.3	24857165	14632569	23692599	0.144	2921.6	0.000	-28.9
800	0.000399	0.000526	9924.7	7534.9	24855096	14326431	23637439	0.077	2914.8	0.000	-28.8
900	0.000390	0.000535	10120.5	7385.9	25925890	13808617	23564352	0.158	2905.8	0.000	-28.9
1000	0.000389	0.000538	10120.5	7317.0	26025178	13603835	23436105	0.146	2890.0	0.000	-28.9
2000	0.000401	0.000511	9217.2	7228.7	22996894	14144403	22357727	0.127	2757.0	0.000	-28.9
3000	0.000375	0.000475	8496.7	6712.1	22629390	14121650	20693964	0.149	2551.9	0.000	-28.9
4000	0.000322	0.000387	6562.7	5452.1	20391963	14074074	16434922	0.087	2026.6	0.000	-28.9
5000	0.000268	0.000359	6097.5	4554.1	22735573	12682663	14387107	0.119	1774.1	0.000	-28.9
6000	0.000253	0.000332	5651.6	4308.3	22312220	12966737	13491447	0.091	1663.7	0.000	-28.9
7000	0.000243	0.000310	5345.6	4189.1	22010909	13516958	12961221	0.070	1598.3	0.000	-29.0
8000	0.000238	0.000301	5118.9	4054.5	21472409	13471451	12486156	0.082	1539.7	0.000	-29.0
9000	0.000238	0.000305	5032.9	3928.1	21111801	12860554	12175191	0.080	1501.4	0.000	-29.0
10000	0.000223	0.000311	5153.3	3698.5	23057570	11877327	11882843	0.071	1465.3	0.000	-29.0
13079	0.000212	0.000276	4699.0	3606.8	22209485	13085331	11260914	0.085	1388.7	0.000	-29.0
20000	0.000206	0.000268	4427.3	3394.3	21532396	12656462	10603131	0.093	1307.5	0.000	-29.1

Filename : RL2336
Material : Asphalt Rubber Hot Mix, California

Beam width (cm) : 5.042 Beam depth (cm) : 5.047 Bulk density (KN/m^3) : 23.44 Deflection (mm) : 0.2164

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000420	0.000448	8382.3	7853.4	19949993	17511232	22952766	0.135	2734.5	0.000	-28.8
13	0.000381	0.000462	8070.6	6664.5	21157997	14429167	20662936	0.143	2461.7	0.000	-28.8
20	0.000375	0.000450	7848.6	6548.9	20902193	14553966	20208556	0.171	2407.6	0.000	-28.8
30	0.000370	0.000444	7741.7	6443.0	20951837	14511217	19905865	0.186	2371.5	0.000	-28.8
40	0.000356	0.000447	7862.4	6263.9	22079859	14013398	19735559	0.167	2351.2	0.000	-28.8
50	0.000378	0.000435	7436.9	6469.1	19650750	14869068	19584558	0.130	2333.2	0.000	-28.8
60	0.000359	0.000444	7677.6	6209.2	21382085	13984439	19432868	0.163	2315.2	0.000	-28.8
70	0.000362	0.000443	7569.3	6193.0	20906330	13994782	19281868	0.154	2297.1	0.000	-28.8
80	0.000377	0.000428	7227.3	6371.1	19172237	14898716	19168100	0.132	2283.6	0.000	-28.8
90	0.000364	0.000423	7283.9	6258.0	20035491	14789086	19054333	0.149	2270.1	0.000	-28.8
100	0.000361	0.000429	7328.0	6157.6	20323702	14349874	18941255	0.158	2256.6	0.000	-28.8
200	0.000358	0.000410	6835.7	5965.7	19115698	14559482	18033183	0.142	2148.4	0.000	-28.8
300	0.000350	0.000404	6492.1	5629.6	18541345	13942380	17067883	0.106	2033.4	0.000	-28.8
400	0.000334	0.000386	6177.0	5342.2	18507559	13843781	16216351	0.104	1931.9	0.000	-28.9
500	0.000322	0.000380	5918.5	5013.4	18390344	13194962	15364818	0.119	1830.5	0.000	-28.9
600	0.000294	0.000386	5942.2	4519.8	20244410	11712537	14531902	0.108	1731.3	0.000	-28.9
700	0.000295	0.000355	5255.4	4372.2	17814612	12329639	13510753	0.122	1609.6	0.000	-28.9
800	0.000279	0.000341	4922.7	4019.9	17667748	11781487	12526147	0.107	1492.4	0.000	-28.9
900	0.000261	0.000338	4799.1	3699.7	18405513	10938918	11826304	0.100	1409.0	0.000	-28.9
1000	0.000255	0.000311	4434.6	3628.3	17405738	11651861	11296768	0.084	1345.8	0.000	-29.0
1400	0.000240	0.000285	3807.6	3209.5	15872290	11278152	9858471	0.087	1174.5	0.000	-29.0
2000	0.000222	0.000276	3469.2	2794.1	15626828	10137029	8760787	0.082	1043.7	0.000	-29.0
3000	0.000212	0.000264	3063.8	2457.9	14480879	9319972	7720332	0.062	919.8	0.000	-29.0
4000	0.000213	0.000262	2796.3	2272.0	13123943	8664257	7095645	0.047	845.4	0.000	-29.1
5000	0.000198	0.000244	2657.3	2155.0	13410086	8819395	6736277	0.058	802.5	0.000	-29.1
5159	0.000200	0.000237	2550.8	2149.7	12776435	9074510	6603824	0.035	786.8	0.000	-29.1

Filename : RL3335
Material : Asphalt Rubber Hot Mix, California
Beam width (cm) : 5.123 Beam depth (cm) : 5.080

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)
1	0.000492	0.000547	7763.1	6980.5
13	0.000466	0.000511	7104.6	6483.2
20	0.000468	0.000507	6999.8	6464.3
30	0.000463	0.000502	6934.3	6399.6
40	0.000466	0.000489	6756.0	6447.0
60	0.000462	0.000495	6771.5	6322.8
70	0.000456	0.000490	6765.0	6292.1
80	0.000460	0.000505	6809.2	6206.7
90	0.000447	0.000505	6916.4	6120.5
100	0.000457	0.000490	6719.9	6270.6
200	0.000451	0.000504	6772.9	6071.6
300	0.000459	0.000495	6618.9	6140.3
400	0.000448	0.000504	6741.5	6003.5
500	0.000463	0.000498	6559.1	6107.4
600	0.000460	0.000501	6581.1	6052.3
700	0.000466	0.000492	6497.0	6162.3
800	0.000459	0.000492	6530.9	6095.5
900	0.000460	0.000510	6628.7	5989.1
1000	0.000466	0.000501	6517.2	6071.0
2000	0.000462	0.000499	6485.6	6001.6
3000	0.000475	0.000502	6390.1	6048.8
4000	0.000472	0.000510	6493.6	6018.9
5000	0.000478	0.000502	6442.8	6137.0
6000	0.000484	0.000490	6331.4	6254.5
7000	0.000490	0.000504	6398.5	6228.1
8000	0.000481	0.000519	6563.2	6091.7
9000	0.000504	0.000511	6371.9	6279.1
10000	0.000498	0.000510	6414.1	6264.0
20000	0.000513	0.000521	6459.0	6348.2
30000	0.000541	0.000524	6318.9	6516.3
40000	0.000589	0.000542	6133.1	6655.5
50000	0.000623	0.000571	6047.9	6600.6
60000	0.000681	0.000571	5729.5	6836.5
70000	0.000779	0.000584	5356.9	7147.4
80000	0.000891	0.000614	5061.8	7347.3
90000	0.000994	0.000653	4798.2	7306.6
100000	0.001132	0.000694	4488.9	7321.1
200000	0.002476	0.000958	2539.8	6564.8

Bulk density (KN/m^3) : 23.18 Deflection (mm) : 0.2057

Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
15788861	12766093	21743383	0.049	2551.9	0.001	-29.0
15234503	12686111	20053418	0.071	2353.5	0.000	-29.0
14961461	12760577	19880354	0.078	2333.2	0.000	-29.0
14965598	12745408	19687983	0.099	2310.7	0.000	-29.0
14487085	13192204	19515608	0.083	2290.4	0.000	-29.0
14660839	12781951	19342544	0.078	2270.1	0.000	-29.0
14838040	12835732	19284626	0.092	2263.3	0.000	-29.0
14789775	12288269	19208091	0.080	2254.3	0.000	-29.0
15473070	12117273	19208091	0.097	2254.3	0.000	-29.0
14691177	12792294	19188785	0.074	2252.1	0.000	-29.0
15002141	12055908	18939186	0.109	2222.7	0.000	-29.0
14422961	12413069	18843346	0.081	2211.5	0.000	-28.9
15031790	11920766	18785428	0.104	2204.7	0.000	-29.0
14154746	12272411	18708893	0.096	2195.7	0.000	-29.0
14294714	12089693	18650975	0.103	2188.9	0.000	-29.0
13931348	12533042	18708893	0.085	2195.7	0.000	-29.0
14231280	12397210	18650975	0.078	2188.9	0.000	-29.0
14398139	11753217	18612363	0.073	2184.4	0.000	-29.0
13974786	12126926	18593747	0.069	2182.1	0.000	-29.0
14041668	12024191	18439988	0.061	2164.1	0.000	-28.9
13444561	12046944	18382070	0.080	2157.4	0.000	-29.0
13748630	11811825	18477911	0.076	2168.7	0.000	-28.9
13470762	12222077	18593747	0.074	2182.1	0.000	-29.0
13074989	12759198	18612363	0.058	2184.4	0.000	-29.0
13052925	12366872	18670281	0.059	2191.2	0.000	-29.0
13637621	11748391	18689587	0.068	2193.4	0.000	-29.0
12652325	12286201	18708893	0.080	2195.7	0.000	-29.1
12888824	12293096	18746816	0.046	2200.2	0.000	-29.1
12601992	12173123	18939186	0.033	2222.7	0.000	-29.0
11682888	12424790	18977798	0.014	2227.3	0.000	-29.0
10421103	12271721	18881268	0.071	2216.0	0.000	-29.0
9710918	11567052	18670281	0.051	2191.2	0.000	-29.1
8414658	11980063	18439988	0.065	2164.1	0.000	-29.0
6874453	12236557	18113165	0.124	2125.8	0.001	-29.1
5681066	11968341	17729114	0.260	2080.7	0.001	-29.0
4828155	11196791	17133386	0.287	2010.8	0.001	-29.0
3964142	10543834	16461123	0.419	1931.9	0.001	-29.0
1025631	6852320	10833424	0.686	1271.4	0.001	-29.1

Filename : RL4336
Material : Asphalt Rubber Hot Mix, California

Beam width (cm) : 5.136 Beam depth (cm) : 5.050 Bulk density (KN/m^3) : 23.20 Deflection (mm) : 0.2159

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000642	0.000527	7373.5	8978.0	11482933	17020997	22960350	0.373	2784.1	0.000	-28.8
13	0.000504	0.000508	7764.5	7696.2	15417220	15147626	21919205	0.116	2657.8	0.000	-28.8
20	0.000499	0.000505	7710.0	7619.0	15446869	15084881	21733730	0.182	2635.3	0.000	-28.8
30	0.000502	0.000498	7604.5	7672.8	15144178	15417910	21659264	0.189	2626.3	0.000	-28.8
40	0.000569	0.000490	7053.6	8189.9	12392384	16706585	21491715	0.116	2606.0	0.000	-28.8
50	0.000589	0.000487	6890.9	8323.6	11708400	17084431	21380016	0.298	2592.4	0.000	-28.8
60	0.000574	0.000487	6935.7	8165.7	12090383	16759677	21269007	0.184	2578.9	0.000	-28.8
70	0.000583	0.000477	6795.6	8303.6	11664961	17415391	21194541	0.464	2569.9	0.000	-28.8
80	0.000577	0.000483	6871.9	8207.8	11918008	17003070	21213157	0.313	2572.1	0.000	-28.8
90	0.000571	0.000486	6899.8	8106.5	12091072	16689348	21138691	0.252	2563.2	0.000	-28.8
100	0.000454	0.000502	7838.9	7094.3	17249222	14129234	21120075	0.379	2560.9	0.000	-28.8
200	0.000571	0.000480	6764.4	8045.8	11853884	16770709	20840827	0.247	2527.1	0.000	-28.8
300	0.000450	0.000501	7659.7	6884.5	17022376	13752078	20562269	0.190	2493.2	0.000	-28.7
400	0.000460	0.000498	7394.9	6841.2	16061213	13747251	20153396	0.207	2443.7	0.000	-28.7
500	0.000407	0.000489	7556.2	6289.0	18576509	12868828	19465275	0.250	2360.3	0.000	-28.7
600	0.000368	0.000492	7803.8	5840.8	21204194	11879396	18944702	0.192	2297.1	0.000	-28.7
700	0.000364	0.000492	7596.2	5616.5	20894608	11422947	18312431	0.171	2220.5	0.000	-28.7
800	0.000283	0.000508	8648.4	4818.9	30550366	9484762	17550533	0.259	2128.1	0.000	-28.7
900	0.000270	0.000510	8600.8	4551.9	31892823	8933162	16881029	0.202	2046.9	0.000	-28.7
1000	0.000310	0.000505	7456.9	4575.5	24062171	9058651	16081898	0.154	1950.0	0.000	-28.7
2000	0.000162	0.000374	4125.1	1791.4	25399801	4790025	7083234	0.047	858.9	0.000	-28.8
2734	0.000134	0.000361	4111.6	1529.1	30661376	4240770	6321129	0.064	766.5	0.000	-28.8

Filename : AR14100
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks
Beam width (cm) : 4.666 Beam depth (cm) : 5.123 Bulk density (KN/m^3) : 22.75 Deflection (mm) : 0.3683

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000954	0.000648	476.9	701.6	500136	1082584	930342	0.535	182.6	0.015	21.8
10	0.000927	0.000670	471.2	651.3	508465	971437	895936	0.456	175.8	0.012	21.8
20	0.000933	0.000670	470.0	653.8	503859	975091	895936	0.455	175.8	0.011	21.8
30	0.000967	0.000708	503.9	688.5	521083	972747	953372	0.433	187.1	0.011	21.8
40	0.000912	0.000638	515.3	736.8	565066	1155326	993570	0.381	195.0	0.01	21.8
50	0.000980	0.000699	513.3	720.2	523593	1030596	982055	0.425	192.7	0.01	21.8
60	0.000973	0.000705	531.9	734.3	546698	1041972	1010738	0.423	198.4	0.011	21.8
70	0.000951	0.000635	514.4	770.4	541175	1213865	1010738	0.407	198.4	0.011	21.8
80	0.000943	0.000630	529.2	792.0	561122	1256545	1039490	0.413	204.0	0.01	21.8
200	0.001039	0.000702	584.5	864.9	562797	1232481	1142846	0.388	224.3	0.01	21.8
300	0.001012	0.000694	608.8	887.1	601809	1277712	1183044	0.323	232.2	0.008	21.8
400	0.000925	0.000641	560.6	809.6	605905	1263716	1085411	0.375	213.0	0.009	21.8
500	0.000925	0.000654	619.3	876.0	669291	1339285	1188836	0.373	233.3	0.008	21.8
600	0.001045	0.000696	595.7	894.2	570375	1285159	1171598	0.368	229.9	0.008	21.8
700	0.000994	0.000682	632.6	921.3	636560	1350110	1229034	0.402	241.2	0.008	21.8
800	0.000942	0.000653	614.2	886.3	652295	1358108	1188836	0.375	233.3	0.008	21.9
900	0.000937	0.000687	619.6	845.4	661120	1230758	1171598	0.369	229.9	0.008	21.9
1000	0.000936	0.000645	607.0	880.4	648744	1364658	1177321	0.365	231.1	0.008	21.9
2000	0.000912	0.000632	626.0	903.6	686535	1430299	1211796	0.341	237.8	0.007	22.0
3000	0.000924	0.000653	604.1	855.2	653998	1310395	1160084	0.324	227.7	0.007	22.0
4000	0.000906	0.000633	631.3	903.1	696878	1426231	1217519	0.313	239.0	0.007	22.0
5000	0.000900	0.000633	659.9	937.8	733283	1480977	1269232	0.311	249.1	0.007	22.0
6000	0.000900	0.000621	622.2	901.2	691362	1450432	1206004	0.306	236.7	0.007	22.0
7000	0.000906	0.000635	664.7	948.7	733768	1494629	1280677	0.303	251.4	0.007	22.0
8000	0.000901	0.000632	658.8	940.0	730870	1488010	1269232	0.304	249.1	0.006	22.0
9000	0.000900	0.000641	717.1	1007.3	796855	1572198	1372588	0.286	269.4	0.006	22.0
10000	0.000909	0.000621	708.2	1036.0	779204	1667349	1378311	0.282	270.5	0.006	22.0
20000	0.000833	0.000541	618.6	952.7	742729	1761397	1229034	0.215	241.2	0.005	22.0
30000	0.000812	0.000527	604.2	930.3	744108	1763672	1200282	0.176	235.6	0.005	22.0
34526	0.000748	0.000498	636.3	956.3	850705	1921705	1251994	0.153	245.7	0.004	22.0
60842	0.000615	0.000349	466.6	823.8	758519	2362917	976332	0.084	191.6	0.003	22.0
60857	0.000593	0.000371	495.8	792.4	836019	2135864	999292	0.086	196.1	0.003	22.0
61461	0.000623	0.000383	489.6	796.4	786168	2079739	993570	0.080	195.0	0.003	21.9
62117	0.000650	0.000386	497.3	837.1	765552	2169374	1022253	0.091	200.6	0.003	22.0
66137	0.000557	0.000362	520.5	801.1	933997	2212399	1033767	0.068	202.9	0.003	21.9
70000	0.000496	0.000356	523.8	729.8	1055762	2049608	999292	0.047	196.1	0.003	22.0
80000	0.000541	0.000323	456.5	763.6	843948	2361675	936134	0.032	183.7	0.002	22.0
90000	0.000538	0.000317	457.0	774.6	849671	2440761	941857	0.042	184.9	0.002	22.0
100000	0.000477	0.000282	482.3	816.6	1011565	2899761	993570	0.028	195.0	0.001	21.9
142410	0.000374	0.000243	520.4	801.3	1391411	3299326	1033767	0.002	202.9	0	21.7

Filename : AR2360

Material : Asphalt Rubber Concrete , Danby Str., Fairbanks

Beam width (cm) : 4.674 Beam depth (cm) : 5.098 Bulk density (KN/m^3) : 22.71 Deflection (mm) : 0.4420

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000991	0.000757	577.3	755.8	582676	998465	898212	0.664	208.7	0.014	21.8
13	0.001034	0.000767	550.5	741.8	532363	966748	867115	0.554	201.5	0.011	21.8
20	0.001010	0.000770	538.3	705.8	532825	916346	838018	0.539	194.8	0.011	21.8
30	0.000997	0.000766	511.3	665.4	512919	868908	793408	0.519	184.4	0.011	21.8
40	0.001022	0.000769	548.7	729.5	536852	948890	859393	0.537	199.7	0.01	21.8
50	0.001036	0.000766	584.1	789.8	564080	1031285	921448	0.517	214.2	0.01	21.8
60	0.001015	0.000770	567.1	746.9	558881	969713	884629	0.519	205.6	0.01	21.8
70	0.001015	0.000770	544.7	717.5	536817	931446	849671	0.523	197.5	0.01	21.8
80	0.001000	0.000760	537.5	707.2	537624	930618	838018	0.510	194.8	0.01	21.8
90	0.001019	0.000767	562.6	747.2	552021	973781	880698	0.515	204.7	0.01	21.8
100	0.001059	0.000770	540.9	743.8	510568	965645	859393	0.520	199.7	0.01	21.8
200	0.000980	0.000778	597.1	752.7	609035	967713	913725	0.470	212.4	0.009	21.9
300	0.000998	0.000779	591.6	757.9	592625	972609	911795	0.474	211.9	0.009	21.9
400	0.001007	0.000773	623.6	812.2	619109	1050315	968058	0.418	225.0	0.009	21.9
500	0.000985	0.000781	584.2	737.0	593211	943926	894282	0.448	207.8	0.009	21.9
600	0.001028	0.000782	609.9	801.6	593287	1024804	950545	0.451	220.9	0.009	21.9
700	0.001006	0.000778	580.4	750.5	577112	965024	898212	0.421	208.7	0.008	21.9
800	0.000982	0.000782	635.0	797.1	646758	1019081	969989	0.399	225.4	0.008	21.9
900	0.001004	0.000769	565.4	738.5	563011	960611	878768	0.412	204.2	0.008	21.9
1000	0.000958	0.000772	568.0	705.1	592873	913519	863254	0.385	200.6	0.008	22.0
2000	0.000961	0.000797	635.0	765.6	660748	960405	952475	0.375	221.4	0.008	22.1
3000	0.000934	0.000796	615.2	722.4	658548	907934	911795	0.355	211.9	0.008	22.1
4000	0.000907	0.000770	526.7	620.5	580497	805474	781824	0.332	181.7	0.008	22.1
5000	0.000894	0.000770	588.3	682.7	658038	886283	867115	0.325	201.5	0.007	22.1
6000	0.000878	0.000772	556.7	633.0	634340	820160	812852	0.333	188.9	0.007	22.1
7000	0.000851	0.000757	594.4	668.2	698739	882767	863254	0.294	200.6	0.007	22.0
8000	0.000836	0.000708	505.2	596.7	604416	843121	750728	0.275	174.5	0.007	22.1
9000	0.000827	0.000720	605.5	695.8	732249	966886	888490	0.266	206.5	0.007	22.1
10000	0.000784	0.000697	553.1	621.6	705703	891455	803130	0.258	186.7	0.007	22.1
15793	0.000678	0.000618	619.1	678.7	913174	1097684	888490	0.192	206.5	0.006	22.0
20000	0.000621	0.000551	557.7	628.5	897591	1140088	810921	0.153	188.5	0.006	21.7
30000	0.000520	0.000450	563.1	650.7	1082791	1446088	828365	0.125	192.5	0.006	21.7
40000	0.000435	0.000419	572.9	595.3	1316807	1421956	801199	0.102	186.2	0.006	21.7
50000	0.000416	0.000395	584.4	615.3	1405891	1558339	822505	0.096	191.2	0.006	21.7
60000	0.000395	0.000384	592.9	609.0	1501731	1584333	824504	0.100	191.6	0.007	21.7
70000	0.000374	0.000356	571.3	600.0	1527725	1685000	803130	0.094	186.7	0.007	21.7
80000	0.000374	0.000338	518.3	573.1	1385895	1694446	746866	0.086	173.6	0.007	21.7
90000	0.000365	0.000350	554.0	577.6	1517590	1649491	775963	0.096	180.3	0.007	22.0
100000	0.000359	0.000344	534.4	557.6	1488286	1619911	748797	0.100	174.0	0.007	22.0
127720	0.000334	0.000323	545.6	563.2	1634667	1741815	760450	0.090	176.7	0.007	22.0

Filename : AR3370

Material : Asphalt Rubber Concrete , Danby Str., Fairbanks

Beam width (cm) : 4.643 Beam depth (cm) : 5.105 Bulk density (KN/m^3) : 22.58 Deflection (mm) : 0.5182

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.001137	0.001085	518.5	543.4	456077	500984	620116	0.858	168.6	0.016	21.8
11	0.001137	0.001074	670.6	709.6	589874	660596	805819	0.699	219.1	0.01	21.8
21	0.001138	0.001064	691.7	740.2	607649	695706	835674	0.669	227.2	0.01	21.8
33	0.001138	0.001067	731.1	780.2	642276	731284	882077	0.645	239.9	0.009	21.8
40	0.001150	0.001067	753.4	812.4	655025	761484	913588	0.623	248.4	0.009	21.8
50	0.001119	0.001077	738.0	766.6	659521	711564	878768	0.618	239.0	0.009	21.8
60	0.001134	0.001089	785.8	818.1	693085	751141	936824	0.603	254.7	0.009	21.8
70	0.001116	0.001079	761.8	788.1	682605	730525	905314	0.609	246.2	0.009	21.8
80	0.001123	0.001082	768.7	798.3	684218	738041	915242	0.588	248.9	0.009	21.8
90	0.001120	0.001068	752.5	789.3	671614	738799	900349	0.594	244.8	0.008	21.8
100	0.001138	0.001088	857.3	897.2	753141	824987	1024666	0.584	278.6	0.008	21.9
200	0.001128	0.001086	835.6	867.7	740799	798855	994811	0.552	270.5	0.008	21.9
300	0.001143	0.001085	872.6	919.3	763483	847533	1046247	0.551	284.5	0.008	21.9
400	0.001112	0.001089	834.4	851.5	750659	781755	984882	0.526	267.8	0.007	21.9
500	0.001120	0.001092	888.2	911.2	792718	834364	1051212	0.517	285.8	0.007	21.9
600	0.001113	0.001089	846.4	864.9	760450	794166	999844	0.505	271.9	0.007	21.9
700	0.001103	0.001094	806.9	813.5	731635	743833	946752	0.489	257.4	0.007	21.9
800	0.001119	0.001071	835.9	873.2	747073	815058	998120	0.490	271.4	0.007	21.8
900	0.001118	0.001080	869.3	899.2	777825	832433	1032940	0.485	280.9	0.007	21.8
1000	0.001091	0.001077	793.9	803.8	727905	746177	933514	0.469	253.8	0.007	21.8
2000	0.001065	0.001079	809.5	799.5	759898	741144	940133	0.421	255.6	0.006	21.7
3000	0.001049	0.001053	838.9	835.3	799751	792994	978263	0.387	266.0	0.006	21.8
4000	0.001024	0.001021	736.7	738.9	719769	723975	862220	0.357	234.4	0.006	21.9
5000	0.001010	0.000998	840.6	850.7	832158	852153	988191	0.310	268.7	0.005	22.0
6000	0.000958	0.000967	765.5	758.4	798993	784306	890351	0.283	242.1	0.005	22.0
7000	0.000942	0.000952	780.4	771.9	828779	810714	906968	0.273	246.6	0.005	22.0
8000	0.000918	0.000937	823.0	806.0	896695	860013	951717	0.244	258.8	0.005	22.0
9000	0.000895	0.000891	761.4	765.3	850360	858910	892006	0.222	242.6	0.005	22.0
10000	0.000866	0.000882	756.2	742.2	873597	841466	875458	0.198	238.1	0.004	22.0
20000	0.000620	0.000618	773.8	775.6	1248340	1254407	905314	0.064	246.2	0.002	21.7
30000	0.000493	0.000535	783.8	722.7	1589298	1351075	878768	0.007	239.0	0.001	21.7
35186	0.000444	0.000489	758.5	689.2	1708443	1410165	843948	0.006	229.5	0.001	21.7
40000	0.000408	0.000450	788.9	715.8	1932462	1590745	877113	0.004	238.5	0	21.7
50000	0.000364	0.000416	784.7	686.2	2158273	1650732	855532	0.003	232.6	0	21.6
60000	0.000292	0.000349	765.8	641.4	2622169	1839655	815747	0.002	221.8	0	21.9
70000	0.000222	0.000277	744.9	596.7	3355245	2153171	774309	0.002	210.6	0	21.9
72374	0.000226	0.000286	732.1	579.6	3232721	2026096	756106	0.001	205.6	0	22.0

Filename : AR23300
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks
Beam width (cm) : 4.651 Beam depth (cm) : 5.070 Bulk density (KN/m^3) : 22.72 Deflection (mm) : 0.7366

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.001758	0.001514	489.2	568.2	278255	375336	435219	2.305	165.0	0.019	22.3
13	0.001779	0.001544	309.9	357.1	174181	231362	274690	1.867	104.1	0.015	22.3
20	0.001779	0.001541	323.0	373.0	181559	242097	286577	1.800	108.7	0.015	22.3
30	0.001888	0.001624	535.8	622.8	283819	383486	476838	1.777	180.8	0.014	22.3
40	0.001773	0.001523	256.3	298.5	144574	196011	228314	1.754	86.6	0.014	22.3
50	0.001910	0.001618	530.7	626.4	277820	387147	475652	1.743	180.3	0.014	22.3
60	0.001888	0.001600	525.5	620.0	278379	387423	470894	1.734	178.5	0.014	22.3
70	0.001851	0.001570	389.0	458.4	210229	291914	348411	1.696	132.1	0.014	22.3
80	0.001901	0.001596	524.5	624.9	275862	391581	472080	1.682	179.0	0.014	22.3
90	0.001880	0.001603	469.7	550.9	249799	343626	419761	1.674	159.2	0.013	22.3
100	0.001900	0.001602	518.9	615.5	273166	384265	466136	1.670	176.7	0.013	22.3
200	0.001949	0.001614	446.4	539.1	229052	334118	404302	1.645	153.3	0.013	22.2
300	0.001994	0.001615	486.2	600.2	243911	371606	444734	1.627	168.6	0.013	22.2
400	0.002062	0.001676	511.7	629.5	248151	375564	467322	1.622	177.2	0.013	22.2
500	0.002074	0.001685	485.6	597.6	234120	354644	443542	1.629	168.2	0.013	22.2
600	0.002038	0.001636	374.2	466.2	183572	284957	343654	1.611	130.3	0.013	22.2
700	0.002113	0.001718	527.4	648.6	249633	377563	481595	1.596	182.6	0.012	22.2
800	0.002050	0.001630	381.6	480.0	186144	294479	351983	1.580	133.5	0.012	22.2
900	0.002099	0.001673	465.9	584.6	221943	349383	429276	1.582	162.8	0.012	22.2
1000	0.002117	0.001691	466.4	583.9	220281	345281	429276	1.576	162.8	0.012	22.1
1501	0.002067	0.001615	223.9	286.5	108355	177395	208098	1.575	78.9	0.012	22.1
2000	0.002207	0.001705	474.8	614.7	215193	360643	443542	1.571	168.2	0.012	22.1
3000	0.002169	0.001681	243.5	314.3	112230	186986	227121	1.558	86.1	0.012	22.1
4000	0.002210	0.001666	297.3	394.3	134542	236733	280633	1.530	106.4	0.012	22.1
5000	0.002236	0.001676	287.7	383.9	128668	229045	272311	1.526	103.2	0.012	22.1
6000	0.002275	0.001690	286.6	386.0	125979	228431	272311	1.506	103.2	0.012	22.1
7000	0.002320	0.001722	270.3	364.1	116526	211387	256853	1.498	97.4	0.012	22.1
8000	0.002345	0.001725	270.5	367.7	115353	213118	258038	1.505	97.8	0.012	22.1
9000	0.002216	0.001587	104.8	146.3	47290	92193	101074	1.468	38.3	0.012	22.1
10000	0.002314	0.001676	166.0	229.1	71722	136680	159343	1.482	60.4	0.012	22.1
20000	0.002472	0.001632	166.9	252.9	67530	155006	166480	1.369	63.1	0.011	22.0
30000	0.002338	0.001430	132.0	215.7	56455	150801	135563	1.155	51.4	0.01	22.0
40000	0.001347	0.000834	211.7	341.7	157172	409570	216420	0.483	82.1	0.008	22.0
50000	0.000399	0.000352	322.8	366.6	808439	1042524	284198	0.107	107.8	0.006	22.0
51980	0.000283	0.000282	101.7	102.3	359326	363139	84429	0.082	32.0	0.007	22.0

Filename : AR24340

Material : Asphalt Rubber Concrete , Danby Str., Fairbanks

Beam width (cm) : 4.676 Beam depth (cm) : 5.090 Bulk density (KN/m^3) : 22.75 Deflection (mm) : 0.2946

Rep	Tens strn (m/m)	Comp str (m/m)	Tens strs (KPa)	Comp str (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000657	0.000681	372.3	359.3	566597	527619	753692	0.332	116.3	0.017	22.1
13	0.000659	0.000678	372.5	361.8	565590	533735	756657	0.279	116.8	0.013	22.1
20	0.000672	0.000676	413.8	411.1	615806	607691	850154	0.269	131.2	0.013	22.1
30	0.000653	0.000675	370.5	358.2	567700	530722	750797	0.267	115.9	0.012	22.1
40	0.000669	0.000662	376.3	380.5	562501	575243	780031	0.266	120.4	0.012	22.1
50	0.000678	0.000685	387.6	383.4	571775	559412	794649	0.269	122.6	0.012	22.1
60	0.000670	0.000691	377.1	365.7	562439	529012	765414	0.263	118.1	0.012	22.1
70	0.000657	0.000681	431.5	416.4	656638	611462	873528	0.260	134.8	0.012	22.1
80	0.000648	0.000679	413.7	394.6	638263	580828	832571	0.258	128.5	0.012	22.1
90	0.000672	0.000679	413.3	408.8	615048	601630	847189	0.258	130.7	0.012	22.1
100	0.000669	0.000668	455.9	456.9	681412	684460	940685	0.258	145.2	0.011	22.1
200	0.000673	0.000673	423.8	423.8	629245	629245	873528	0.252	134.8	0.011	22.1
300	0.000679	0.000678	451.6	452.6	664712	667636	931928	0.252	143.8	0.011	22.1
400	0.000691	0.000676	450.1	460.0	650978	679971	937789	0.249	144.7	0.011	22.1
500	0.000685	0.000675	462.7	469.9	675158	696188	961163	0.250	148.3	0.011	22.1
600	0.000681	0.000684	450.3	448.3	661265	655515	926067	0.246	142.9	0.011	22.0
700	0.000687	0.000684	437.0	438.9	636209	641766	902693	0.247	139.3	0.011	22.1
800	0.000694	0.000676	405.7	416.4	584344	615641	847189	0.248	130.7	0.011	22.1
900	0.000696	0.000682	437.9	446.5	629389	654363	911450	0.246	140.7	0.011	22.1
1000	0.000696	0.000685	402.3	408.4	578187	595914	835536	0.244	128.9	0.011	22.1
2000	0.000706	0.000668	423.2	447.7	599196	670759	896902	0.238	138.4	0.011	22.1
3000	0.000714	0.000688	430.2	446.0	602740	647916	902693	0.246	139.3	0.011	22.1
4000	0.000715	0.000702	381.9	389.2	533976	554579	794649	0.239	122.6	0.011	22.1
5000	0.000711	0.000670	338.8	359.1	476686	535604	718666	0.236	110.9	0.011	22.1
6000	0.000712	0.000670	330.2	350.7	463813	523103	701153	0.233	108.2	0.01	22.1
7000	0.000718	0.000687	346.6	362.4	482629	527599	730318	0.230	112.7	0.01	22.1
8000	0.000715	0.000696	418.0	429.7	584510	617509	873528	0.227	134.8	0.01	22.1
9000	0.000724	0.000688	319.3	335.9	440963	487966	674841	0.229	104.1	0.01	22.1
10000	0.000714	0.000679	316.8	332.7	443845	489745	669001	0.226	103.2	0.01	22.1
20000	0.000724	0.000699	369.0	382.4	509603	547215	774171	0.221	119.5	0.01	22.1
30000	0.000736	0.000694	258.9	274.5	351748	395290	549221	0.215	84.8	0.009	22.0
40000	0.000735	0.000687	237.2	253.7	322969	369358	505404	0.213	70.0	0.009	22.0
50000	0.000757	0.000706	353.4	378.8	466936	536328	753692	0.209	116.3	0.009	22.0
60000	0.000741	0.000682	257.4	279.3	347542	409253	552145	0.214	85.2	0.009	22.0
70000	0.000694	0.000656	228.7	242.2	329395	369475	484953	0.204	74.8	0.009	22.0
80000	0.000746	0.000718	298.9	310.7	400468	432668	628100	0.209	96.9	0.009	22.0
90000	0.000763	0.000705	361.3	391.1	473583	554903	774171	0.209	119.5	0.009	22.0
100000	0.000760	0.000702	265.8	287.8	349797	410128	569672	0.213	87.9	0.009	22.0
200000	0.000790	0.000696	290.6	329.8	368007	473997	636864	0.205	98.3	0.009	21.8
300000	0.000791	0.000699	336.3	380.8	425077	544891	736179	0.201	113.6	0.008	21.8
400000	0.000770	0.000688	295.2	330.4	383245	479926	642704	0.196	99.2	0.008	21.8
500000	0.000775	0.000675	324.9	372.9	419306	552510	715770	0.192	110.5	0.008	21.8

Filename : AR28385

Material : Asphalt Rubber Concrete , Danby Str., Fairbanks

Beam width (cm) : 4.608 Beam depth (cm) : 5.034 Bulk density (KN/m^3) : 22.76 Deflection (mm) : 0.6350

Rep	Tens stm (m/m)	Comp stm (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.001125	0.001098	896.5	918.3	796924	836364	877389	1.153	278.2	0.016	21.9
13	0.001119	0.001089	650.0	667.8	580904	613131	637064	0.996	202.0	0.015	21.9
20	0.001138	0.001106	724.7	746.2	636602	674910	711012	0.980	225.4	0.015	21.9
30	0.001122	0.001061	523.6	553.7	466647	521938	520462	0.963	165.0	0.015	21.9
40	0.001135	0.001091	640.0	666.3	563749	610904	631375	0.952	200.2	0.015	21.9
50	0.001144	0.001103	680.0	705.7	594239	640056	669773	0.950	212.4	0.015	21.9
60	0.001122	0.001052	480.1	512.1	427911	486780	479223	0.939	151.9	0.015	21.9
70	0.001106	0.001077	476.1	488.7	430689	453622	466426	0.933	147.9	0.015	21.9
80	0.001092	0.001062	442.4	454.8	405061	428104	433716	0.934	137.5	0.015	21.9
90	0.001138	0.001113	660.2	675.2	579952	606650	645600	0.936	204.7	0.015	21.9
100	*0.001118*	*0.001083*	*501.0*	516.8	448327	477141	492020	0.932	156.0	0.015	21.9
200	0.001123	0.001092	477.1	490.7	424642	449326	467846	0.914	148.3	0.015	21.9
300	0.001138	0.001101	490.3	506.9	430758	460393	482064	0.911	152.8	0.015	21.9
400	0.001129	0.001098	426.3	438.5	377494	399310	418071	0.902	132.6	0.015	21.9
500	0.001158	0.001106	464.3	486.2	401034	439756	459310	0.902	145.6	0.015	21.9
600	0.001170	0.001125	491.9	511.4	420526	454615	484912	0.892	153.7	0.014	21.9
700	0.001186	0.001146	588.3	609.0	496068	531515	578766	0.898	183.5	0.014	21.9
800	0.001195	0.001149	519.1	540.0	434454	470094	511926	0.893	162.3	0.014	21.9
900	0.001150	0.001088	359.1	379.7	312157	349108	356927	0.910	113.2	0.015	21.9
1000	0.001150	0.001098	369.4	388.9	321107	352328	365463	0.890	115.9	0.014	21.9
2000	0.001222	0.001141	436.6	467.4	357333	409487	436584	0.865	138.4	0.014	21.9
3000	0.001264	0.001112	362.1	411.6	286591	370317	372571	0.880	118.1	0.014	21.9
4000	0.001348	0.001167	530.7	613.4	393594	525799	550324	0.883	174.5	0.013	21.9
5000	0.001350	0.001138	456.7	541.6	338338	475796	479223	0.884	151.9	0.013	21.9
6000	0.001404	0.001174	572.5	684.4	407915	582931	602940	0.882	191.2	0.013	21.9
7000	0.001371	0.001118	377.7	463.3	275545	414610	402434	0.876	127.6	0.013	21.9
8000	0.001399	0.001132	501.5	619.7	358478	547229	536100	0.872	170.0	0.013	21.9
9000	0.001368	0.001091	355.5	445.8	259900	408763	382528	0.862	121.3	0.013	21.9
10000	0.001424	0.001123	497.1	630.3	349004	561053	537527	0.854	170.4	0.013	21.9
20000	0.001360	0.000997	337.6	460.7	248186	462234	376839	0.735	119.5	0.012	21.8
30000	0.001311	0.000924	444.9	631.5	339324	683591	504817	0.638	160.1	0.011	21.9
40000	0.001195	0.000822	387.3	562.7	324106	684156	443673	0.540	140.7	0.011	21.9
50000	0.001079	0.000741	329.8	480.5	305759	648847	378260	0.465	119.9	0.011	21.9
60000	0.001003	0.000696	367.4	529.5	366400	760932	419499	0.399	133.0	0.01	21.9
70000	0.000891	0.000618	325.1	468.4	364842	757554	371151	0.339	117.7	0.01	21.9
80000	0.000828	0.000577	406.5	584.1	490724	1012876	463578	0.291	147.0	0.01	21.9
90000	0.000741	0.000516	441.5	634.1	596183	1230068	503397	0.241	159.6	0.009	21.9
100000	0.000620	0.000454	415.4	566.6	670235	1246823	463578	0.196	147.0	0.009	21.9
121670	0.000451	0.000358	429.5	542.3	951441	1516555	463578	0.122	147.0	0.009	21.9
132920	0.000367	0.000299	386.1	472.5	1053418	1577852	410963	0.110	130.3	0.009	21.9

Filename : AR29390
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks
Beam width (cm) : 4.592 Beam depth (cm) : 4.999 Bulk density (KN/m^3) : 22.78 Deflection (mm) : 0.6680

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.001286	0.001106	505.1	587.5	392843	531411	502887	1.184	163.7	0.016	21.9
13	0.001311	0.001119	478.4	560.6	364890	501011	477955	1.114	155.5	0.016	21.9
20	0.001338	0.001141	504.7	591.6	377191	518387	504273	1.099	164.1	0.016	21.9
30	0.001389	0.001156	667.8	802.0	480885	693637	674676	1.098	219.6	0.016	21.9
40	0.001353	0.001143	462.4	547.4	341778	478989	464096	1.089	151.0	0.016	21.9
50	0.001366	0.001158	536.3	632.9	392519	546711	537520	1.087	174.9	0.016	21.9
60	0.001371	0.001146	516.5	617.9	376791	539286	520897	1.085	169.5	0.016	21.9
70	0.001366	0.001165	550.4	645.4	402813	553896	549993	1.080	179.0	0.016	21.9
80	0.001351	0.001158	483.4	564.3	357733	487456	482105	1.080	156.9	0.016	21.9
90	0.001351	0.001137	427.1	507.7	316025	446568	429462	1.078	139.8	0.016	21.9
100	0.001383	0.001189	552.5	642.5	399565	540361	549993	1.075	179.0	0.016	21.9
200	0.001389	0.001174	516.4	610.8	371896	520242	518125	1.054	168.6	0.016	21.9
300	0.001416	0.001168	539.5	653.7	381114	559591	547222	1.041	178.1	0.015	21.9
400	0.001432	0.001191	576.9	693.8	402909	582848	583241	1.051	189.8	0.015	21.9
500	0.001457	0.001195	626.4	763.9	429889	639270	637270	1.041	207.4	0.015	21.9
600	0.001451	0.001188	600.0	733.2	413424	617440	610945	1.035	198.8	0.015	21.9
700	0.001411	0.001155	425.8	520.4	301808	450643	433620	1.031	141.1	0.015	21.9
800	0.001427	0.001176	450.3	546.7	315453	465061	457173	1.024	148.8	0.015	21.9
900	0.001512	0.001211	611.8	763.8	404537	630534	628955	1.025	204.7	0.015	21.9
1000	0.001472	0.001199	503.8	618.3	342213	515491	513974	1.021	167.3	0.015	21.8
2000	0.001480	0.001192	364.8	452.8	246545	379859	374047	1.026	121.7	0.014	21.9
3000	0.001576	0.001256	466.5	585.5	295933	466136	480726	1.028	156.4	0.014	21.9
4000	0.001608	0.001256	409.2	523.7	254508	416961	425311	1.029	138.4	0.014	21.9
5000	0.001667	0.001283	438.2	569.5	262837	443962	458559	1.034	149.2	0.013	21.9
6000	0.001719	0.001299	402.0	532.0	233782	409432	423925	1.046	138.0	0.013	21.9
7000	0.001810	0.001353	428.8	573.8	236878	424139	454401	1.076	147.9	0.013	21.8
8000	0.001839	0.001338	382.6	525.8	208119	392987	410066	1.085	133.5	0.013	21.9
9000	0.001821	0.001302	278.5	389.4	152959	299009	300622	1.104	97.8	0.013	21.8
10000	0.001955	0.001389	337.8	475.6	172830	342495	365738	1.135	119.0	0.013	21.9
20000	0.003051	0.002135	443.8	634.3	145457	297092	483491	1.270	157.4	0.012	21.9
23614	0.003209	0.002317	322.1	446.2	100357	192570	346343	1.284	112.7	0.011	21.9
30000	0.004010	0.002837	362.8	512.8	90497	180773	393442	1.333	128.0	0.01	21.9
40000	0.004534	0.009853	907.0	417.3	200038	42357	529212	0.776	172.2	0.005	21.9
74447	0.003338	0.010071	998.0	330.7	299015	32842	459945	0.322	149.7	0.004	21.9
74462	0.002396	0.009145	1002.0	262.5	418223	28703	385134	0.260	125.3	0.006	21.9

Filename : AR6460
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks
Beam width (cm) : 4.572 Beam depth (cm) : 4.953 Bulk density (KN/m^3) : 22.52 Deflection (mm) : 0.2159

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000535	0.000422	2669.4	3386.3	4990463	8030607	8630472	0.294	879.2	0.004	-2.0
13	0.000547	0.000423	2579.9	3333.9	4718111	7878917	8409142	0.292	856.6	0.004	-2.0
20	0.000524	0.000419	2560.4	3207.3	4881936	7660345	8231941	0.288	838.6	0.004	-2.0
30	0.000532	0.000410	2564.6	3329.3	4821467	8125758	8376046	0.285	853.2	0.004	-2.0
40	0.000530	0.000420	2579.1	3255.9	4862285	7749291	8320886	0.290	847.6	0.004	-2.0
50	0.000539	0.000420	2488.7	3194.7	4614134	7603117	8088525	0.300	824.0	0.005	-2.0
60	0.000538	0.000416	2493.6	3226.6	4636129	7761702	8132653	0.289	828.5	0.005	-2.0
70	0.000539	0.000411	2421.7	3176.3	4489817	7723779	7944419	0.288	809.3	0.005	-2.0
80	0.000524	0.000423	2548.3	3158.5	4858975	7464527	8154717	0.290	830.7	0.005	-2.0
90	0.000527	0.000413	2479.9	3169.3	4701769	7678962	8043707	0.292	819.4	0.005	-2.0
100	0.000536	0.000429	2500.8	3126.1	4662399	7285257	8032675	0.296	818.3	0.005	-2.0
200	0.000524	0.000413	2465.6	3133.2	4701149	7591395	7977515	0.289	812.7	0.005	-2.0
300	0.000527	0.000408	2468.1	3188.7	4679430	7810656	8043707	0.284	819.4	0.005	-1.9
400	0.000524	0.000404	2387.9	3101.6	4552975	7681720	7800314	0.285	794.6	0.005	-2.0
500	0.000520	0.000404	2396.8	3086.7	4609308	7644487	7800314	0.286	794.6	0.005	-2.0
600	0.000529	0.000410	2394.3	3090.8	4526636	7543130	7800314	0.275	794.6	0.005	-2.0
700	0.000521	0.000408	2405.4	3072.5	4612548	7525893	7800314	0.280	794.6	0.005	-2.0
800	0.000538	0.000396	2359.9	3202.7	4387495	8080940	7856163	0.267	800.3	0.005	-2.0
900	0.000520	0.000386	2333.8	3144.7	4488024	8149201	7745154	0.268	789.0	0.005	-2.0
1000	0.000520	0.000393	2319.3	3066.1	4460307	7794798	7634834	0.268	777.7	0.005	-2.0
2000	0.000501	0.000378	2227.9	2947.2	4450309	7787213	7335591	0.240	747.3	0.004	-1.9
3000	0.000478	0.000383	2232.9	2789.0	4668673	7283189	7170111	0.224	730.4	0.004	-1.9
4000	0.000456	0.000367	2216.3	2756.9	4861113	7521756	7103229	0.209	723.6	0.004	-2.0
5000	0.000441	0.000349	2124.5	2687.4	4817123	7707921	6860111	0.184	698.8	0.004	-1.9
6000	0.000423	0.000314	1978.0	2662.3	4674396	8468439	6561351	0.155	668.4	0.004	-2.0
7000	0.000390	0.000331	2036.3	2403.2	5216343	7265262	6373255	0.129	649.3	0.004	-2.0
8000	0.000375	0.000295	1910.3	2431.3	5087752	8241594	6185160	0.106	630.1	0.004	-1.9
9000	0.000361	0.000283	1831.1	2332.2	5078305	8238146	5930665	0.096	604.1	0.003	-2.0
10000	0.000352	0.000247	1678.8	2386.7	4774305	9649553	5698304	0.080	580.5	0.003	-2.0
14369	0.000276	0.000194	1446.8	2058.8	5248681	10629332	4912756	0.037	500.4	0.002	-2.0
20000	0.000195	0.000165	1350.5	1593.8	6919133	9637142	4226704	0.001	430.6	0.001	-2.0
26493	0.000194	0.000122	1082.9	1716.9	5590880	14052010	3839481	0.003	391.1	0.001	-2.0

Filename : AR7470

Material : Asphalt Rubber Concrete , Danby Str., Fairbanks

Beam width (cm) : 4.757 Beam depth (cm) : 5.088 Bulk density (KN/m^3) : 22.66 Deflection (mm) : 0.2540

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000584	0.000648	3317.0	2989.1	5679136	4611859	7522445	0.366	1016.7	0.005	-2.2
13	0.000580	0.000672	3319.8	2863.4	5727883	4261248	7355586	0.405	994.1	0.005	-2.2
20	0.000569	0.000675	3291.9	2776.0	5783871	4112936	7205275	0.413	973.8	0.005	-2.2
30	0.000568	0.000673	3258.4	2746.6	5739950	4078324	7130809	0.409	963.7	0.006	-2.2
40	0.000572	0.000676	3263.7	2760.6	5704440	4081013	7155631	0.420	967.1	0.006	-2.2
50	0.000565	0.000673	3271.5	2743.2	5793524	4073290	7139083	0.424	964.8	0.006	-2.2
60	0.000551	0.000684	3315.7	2672.8	6014577	3908224	7080476	0.421	957.0	0.006	-2.2
70	0.000565	0.000663	3149.2	2682.2	5576952	4045297	6930165	0.426	936.7	0.006	-2.2
80	0.000568	0.000672	3166.9	2675.4	5578813	3981449	6938439	0.424	937.8	0.006	-2.2
90	0.000559	0.000679	3287.1	2703.3	5883159	3978760	7097024	0.426	959.2	0.006	-2.2
100	0.000541	0.000684	3299.8	2609.7	6101110	3815900	6972224	0.424	942.3	0.006	-2.1
200	0.000548	0.000681	3208.2	2583.4	5851235	3794112	6846942	0.436	925.4	0.006	-2.0
300	0.000544	0.000691	3190.9	2510.1	5867438	3630769	6721867	0.450	908.5	0.006	-2.0
400	0.000553	0.000685	3076.6	2481.4	5565782	3620427	6571762	0.451	888.2	0.006	-2.1
500	0.000550	0.000691	3069.2	2440.8	5582537	3530585	6505019	0.447	879.2	0.006	-2.0
600	0.000550	0.000691	3096.8	2462.8	5632663	3562302	6563419	0.452	887.1	0.006	-2.1
700	0.000544	0.000705	3073.5	2371.7	5651487	3365312	6404972	0.448	865.7	0.006	-2.1
800	0.000545	0.000711	3023.2	2319.7	5543787	3263886	6279828	0.452	848.7	0.007	-2.1
900	0.000545	0.000718	3045.1	2312.2	5584054	3219689	6288171	0.443	849.9	0.006	-2.0
1000	0.000541	0.000714	3036.4	2301.1	5614116	3224240	6263142	0.452	846.5	0.007	-2.0
2000	0.000523	0.000724	2884.7	2083.4	5515862	2877146	5787801	0.407	782.3	0.007	-2.0
3000	0.000416	0.000650	2684.7	1718.0	6458271	2644577	5012182	0.253	677.4	0.006	-2.0
3326	0.000365	0.000568	2454.0	1578.1	6722625	2779857	4595242	0.167	621.0	0.006	-1.9
3761	0.000283	0.000495	2408.8	1378.5	8509120	2786821	4194918	0.101	567.0	0.005	-1.9
4000	0.000265	0.000441	2255.8	1356.6	8505672	3075928	4053157	0.071	547.8	0.005	-1.9
4404	0.000226	0.000401	2162.9	1222.1	9550265	3049314	3736194	0.054	505.0	0.004	-1.9
5000	0.000206	0.000326	1871.4	1179.2	9101400	3613876	3461014	0.027	467.8	0.003	-2.0
6000	0.000162	0.000279	1779.8	1037.4	10958913	3723438	3135777	0.005	423.8	0.002	-1.9
6116	0.000150	0.000271	1826.6	1013.7	12138648	3738193	3119091	0.012	421.6	0.002	-1.9

Filename : AR8450
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks
Beam width (cm) : 4.717 Beam depth (cm) : 5.083 Bulk density (KN/m^3) : 22.60 Deflection (mm) : 0.1803

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000520	0.000608	2728.2	2333.7	5246612	3838929	8484298	0.200	804.8	0.004	-2.2
11	0.000501	0.000606	2680.1	2212.5	5353485	3648627	8175402	0.231	775.5	0.004	-2.2
21	0.000499	0.000609	2640.9	2163.0	5290878	3549477	8020954	0.228	760.8	0.005	-2.2
33	0.000496	0.000600	2589.2	2139.4	5218550	3563129	7902360	0.213	749.6	0.005	-2.2
40	0.000495	0.000605	2623.6	2145.4	5303910	3546650	7961657	0.215	755.2	0.005	-2.2
50	0.000469	0.000611	2704.4	2077.7	5762083	3401235	7925803	0.215	751.8	0.005	-2.2
60	0.000501	0.000603	2595.2	2153.0	5183868	3567956	7937524	0.224	752.9	0.005	-2.2
70	0.000480	0.000615	2706.2	2109.9	5640662	3428815	7997511	0.237	758.6	0.005	-2.2
80	0.000483	0.000608	2646.6	2101.8	5482559	3457429	7902360	0.228	749.6	0.005	-2.2
90	0.000487	0.000617	2658.6	2099.9	5456772	3404337	7914081	0.244	750.7	0.005	-2.2
100	0.000501	0.000609	2585.8	2124.2	5165045	3485836	7866506	0.242	746.2	0.005	-2.1
200	0.000501	0.000609	2570.1	2111.4	5133810	3464738	7818930	0.246	741.7	0.005	-2.1
300	0.000517	0.000602	2501.1	2148.2	4837532	3568783	7795487	0.269	739.4	0.005	-2.1
400	0.000520	0.000611	2490.3	2119.7	4788991	3469978	7723779	0.265	732.6	0.005	-2.1
500	0.000513	0.000624	2524.1	2072.3	4924685	3319460	7676204	0.267	728.2	0.005	-2.2
600	0.000535	0.000620	2449.1	2113.5	4578625	3409853	7652761	0.294	725.9	0.005	-2.2
700	0.000523	0.000623	2450.8	2058.0	4686256	3304360	7545888	0.285	715.7	0.005	-2.2
800	0.000523	0.000621	2443.7	2057.0	4672742	3310703	7533477	0.286	714.6	0.005	-2.1
900	0.000539	0.000635	2431.2	2065.9	4507537	3254854	7533477	0.296	714.6	0.005	-2.2
1000	0.000542	0.000612	2370.4	2099.4	4370741	3428263	7510034	0.295	712.4	0.005	-2.2
2000	0.000545	0.000638	2304.4	1970.7	4225877	3090201	7165284	0.309	679.7	0.006	-2.2
3000	0.000519	0.000665	2363.4	1844.1	4558009	2775031	6987393	0.304	662.8	0.006	-2.2
4000	0.000530	0.000663	2215.7	1772.6	4177198	2673398	6642574	0.305	630.1	0.006	-2.3
5000	0.000499	0.000654	2059.5	1571.6	4126106	2402701	6012785	0.297	570.4	0.006	-2.1
6000	0.000507	0.000705	2022.0	1453.4	3991309	2062295	5703820	0.323	541.0	0.007	-2.1
7000	0.000516	0.000746	2018.2	1393.8	3914843	1867235	5561231	0.329	527.5	0.007	-2.2
8000	0.000504	0.000746	1954.7	1318.7	3881264	1766568	5311701	0.305	503.8	0.007	-2.2
9000	0.000511	0.000751	1905.4	1296.7	3728264	1726784	5204691	0.308	493.7	0.007	-2.2
10000	0.000517	0.000757	1866.5	1275.0	3610084	1684380	5109678	0.305	484.7	0.007	-2.3
14628	0.000483	0.000779	1791.5	1109.8	3710889	1424162	4622477	0.239	438.5	0.007	-2.0
16164	0.000495	0.000752	1683.2	1106.6	3402751	1470704	4503607	0.222	427.2	0.006	-2.1
17464	0.000481	0.000758	1692.6	1074.0	3516933	1416233	4432313	0.214	420.4	0.006	-2.0
18894	0.000489	0.000720	1589.8	1079.6	3253130	1500214	4337300	0.214	411.4	0.006	-2.0
20000	0.000457	0.000733	1632.2	1018.5	3568300	1389343	4230289	0.191	401.3	0.006	-2.1

Filename : AR9440
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks
Beam width (cm) : 4.747 Beam depth (cm) : 5.075 Bulk density (KN/m^3) : 22.53 Deflection (mm) : 0.1422

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000384	0.000356	2117.0	2285.3	5507243	6417728	9413054	0.108	705.6	0.004	-1.7
11	0.000353	0.000356	2140.3	2122.3	6060981	5959969	9126912	0.151	684.2	0.005	-1.7
21	0.000349	0.000352	2129.8	2111.7	6108694	6005614	9082094	0.138	680.8	0.005	-1.7
33	0.000358	0.000356	2116.3	2125.2	5918254	5967898	9082094	0.138	680.8	0.004	-1.7
40	0.000355	0.000352	2101.3	2119.1	5925770	6026575	9037277	0.131	677.4	0.004	-1.7
50	0.000353	0.000350	2094.3	2112.1	5930872	6032229	9006939	0.130	675.2	0.004	-1.7
60	0.000362	0.000371	2111.4	2060.5	5831515	5553854	8931783	0.132	669.5	0.004	-1.7
70	0.000347	0.000340	2084.1	2129.8	6003201	6269417	9022108	0.123	676.3	0.004	-1.7
80	0.000344	0.000352	2104.6	2060.0	6114969	5858544	8916614	0.118	668.4	0.004	-1.7
90	0.000355	0.000362	2096.9	2053.7	5913221	5672379	8886966	0.149	666.2	0.005	-1.7
100	0.000356	0.000359	2083.7	2066.5	5851649	5754912	8886966	0.129	666.2	0.004	-1.7
200	0.000370	0.000349	2013.1	2133.5	5448015	6119450	8871797	0.130	665.0	0.004	-1.8
300	0.000358	0.000341	2000.1	2096.1	5593224	6143514	8766303	0.131	657.1	0.005	-1.8
400	0.000375	0.000349	2007.8	2162.2	5347279	6201570	8916614	0.130	668.4	0.005	-1.7
500	0.000380	0.000338	1928.0	2165.8	5074444	6403455	8735965	0.145	654.9	0.005	-1.8
600	0.000371	0.000344	2020.4	2177.8	5445809	6327542	8976601	0.132	672.9	0.004	-1.7
700	0.000368	0.000355	2002.8	2078.6	5442155	5861508	8735965	0.133	654.9	0.005	-1.7
800	0.000364	0.000352	2030.7	2099.5	5585777	5970863	8841459	0.138	662.8	0.005	-1.7
900	0.000372	0.000361	2017.7	2084.4	5416781	5780837	8781472	0.138	658.2	0.005	-1.7
1000	0.000359	0.000359	2011.9	2011.9	5602877	5602877	8615992	0.137	645.9	0.005	-1.7
2000	0.000374	0.000347	1960.0	2111.5	5241096	6082148	8706317	0.129	652.6	0.005	-1.8
3000	0.000365	0.000349	1949.6	2041.2	5340660	5854613	8540837	0.128	640.2	0.005	-1.8
4000	0.000367	0.000352	1964.1	2047.3	5358656	5822414	8585654	0.130	643.6	0.005	-1.8
5000	0.000370	0.000358	1948.3	2013.3	5272813	5630181	8480850	0.128	635.7	0.005	-1.8
6000	0.000365	0.000349	1942.7	2034.0	5321837	5833997	8510499	0.124	638.0	0.005	-1.8
7000	0.000343	0.000361	1981.5	1883.2	5782216	5222963	8269863	0.134	619.9	0.005	-1.8
8000	0.000349	0.000359	1945.8	1889.2	5580813	5261368	8209877	0.129	615.4	0.005	-1.8
9000	0.000343	0.000352	1945.6	1896.2	5677550	5392511	8225046	0.121	616.5	0.005	-1.7
10000	0.000346	0.000355	1981.0	1931.1	5730848	5445602	8375357	0.122	627.8	0.005	-1.8
20000	0.000337	0.000356	1936.1	1830.8	5749672	5141188	8059566	0.107	604.1	0.005	-1.7
30000	0.000308	0.000332	1819.8	1689.2	5900258	5083959	7503139	0.085	562.4	0.005	-1.7
40000	0.000235	0.000280	1668.5	1402.2	7087371	5006046	6525911	0.041	489.2	0.004	-1.8
50000	0.000215	0.000238	1415.8	1274.2	6598653	5344935	5744018	0.022	430.6	0.003	-1.8
60000	0.000177	0.000206	1258.8	1085.5	7099092	5279088	4992187	0.012	374.2	0.003	-1.8
70000	0.000142	0.000158	1173.7	1052.0	8292617	6660639	4751551	0.002	356.2	0.001	-1.7
80000	0.000143	0.000140	1077.1	1100.0	7530719	7854095	4661365	0.012	349.4	0	-1.8
90000	0.000107	0.000121	1096.8	975.0	10223906	8078182	4420798	0.015	331.4	0	-1.7
92631	0.000119	0.000127	1046.5	984.9	8778714	7776871	4345574	0.033	325.7	0	-1.8
94911	0.000091	0.000124	1185.3	871.1	13041203	7043932	4300480	0.002	322.4	0	-1.7

Filename : AR10440
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks
Beam width (cm) : 4.671 Beam depth (cm) : 5.039 Bulk density (KN/m^3) : 22.71 Deflection (mm) : 0.1422

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000493	0.000550	2296.0	2059.5	4655573	3746054	9364789	0.298	676.3	0.006	-2.2
13	0.000480	0.000565	2249.4	1911.0	4688393	3384204	8911788	0.236	643.6	0.005	-2.2
20	0.000466	0.000547	2228.9	1901.0	4779476	3476459	8849733	0.206	639.1	0.005	-2.2
30	0.000490	0.000550	2218.9	1978.4	4526568	3598432	9021418	0.226	651.5	0.006	-2.2
40	0.000465	0.000550	2235.4	1890.1	4808780	3437847	8833874	0.210	638.0	0.005	-2.2
50	0.000493	0.000551	2157.5	1930.1	4374740	3501074	8786988	0.223	634.6	0.005	-2.2
60	0.000495	0.000562	2187.2	1926.0	4421488	3428952	8833874	0.223	638.0	0.005	-2.2
70	0.000487	0.000539	2138.9	1932.1	4390047	3582159	8755961	0.216	632.3	0.005	-2.2
80	0.000490	0.000547	2204.9	1976.6	4498022	3614773	8990391	0.215	649.3	0.005	-2.2
90	0.000495	0.000542	2200.1	2006.7	4447758	3700133	9052446	0.212	653.7	0.005	-2.2
100	0.000481	0.000556	2214.7	1917.8	4601861	3450810	8864902	0.209	640.2	0.005	-2.2
200	0.000492	0.000559	2161.0	1901.6	4394942	3403441	8724933	0.235	630.1	0.006	-2.3
300	0.000475	0.000563	2265.4	1911.8	4766376	3394546	8943505	0.209	645.9	0.005	-2.2
400	0.000489	0.000565	2211.5	1913.9	4525189	3389237	8849733	0.209	639.1	0.005	-2.3
500	0.000510	0.000566	2165.9	1949.4	4250561	3442949	8849733	0.205	639.1	0.005	-2.3
600	0.000498	0.000563	2206.4	1949.6	4433692	3461566	8927646	0.183	644.7	0.005	-2.1
700	0.000493	0.000556	2178.3	1933.0	4416868	3478183	8833874	0.220	638.0	0.005	-2.2
800	0.000477	0.000550	2228.5	1932.6	4674052	3515140	8927646	0.204	644.7	0.005	-2.2
900	0.000474	0.000562	2266.0	1911.4	4782579	3402820	8943505	0.206	645.9	0.005	-2.2
1000	0.000465	0.000563	2277.0	1879.4	4898139	3336973	8880760	0.207	641.3	0.005	-2.2
2000	0.000478	0.000559	2212.7	1894.1	4626545	3390065	8802847	0.213	635.7	0.005	-2.2
3000	0.000483	0.000557	2206.4	1911.4	4570489	3430125	8833874	0.211	638.0	0.005	-2.1
4000	0.000471	0.000578	2221.2	1809.0	4717697	3129227	8600134	0.194	621.0	0.005	-2.2
5000	0.000495	0.000556	2105.7	1874.2	4256697	3372345	8553248	0.221	617.7	0.005	-2.1
6000	0.000487	0.000557	2195.5	1919.6	4506296	3444880	8833874	0.208	638.0	0.005	-2.2
7000	0.000501	0.000557	2152.7	1934.0	4299998	3470598	8786988	0.223	634.6	0.005	-2.2
8000	0.000493	0.000559	2176.8	1921.4	4413765	3438743	8802847	0.217	635.7	0.005	-2.2
9000	0.000480	0.000581	2200.6	1816.9	4586830	3126745	8584275	0.218	619.9	0.005	-2.2
10000	0.000487	0.000575	2185.8	1851.7	4486232	3219620	8647020	0.226	624.4	0.006	-2.1
20000	0.000508	0.000568	2141.7	1916.8	4215189	3376619	8724933	0.215	630.1	0.005	-2.2
30000	0.000495	0.000592	2197.2	1837.4	4441759	3106335	8631161	0.220	623.3	0.005	-2.2
40000	0.000513	0.000589	2126.3	1851.8	4148515	3146395	8537389	0.232	616.5	0.006	-2.2
50000	0.000521	0.000592	2062.3	1818.1	3954627	3073722	8334676	0.240	601.9	0.006	-2.0
60000	0.000542	0.000589	1996.0	1839.3	3680206	3125228	8256763	0.246	596.3	0.006	-1.9
70000	0.000548	0.000606	1989.2	1798.6	3627873	2965953	8147132	0.266	588.4	0.006	-1.9
80000	0.000580	0.000608	1901.8	1813.3	3281399	2982846	8006474	0.270	578.2	0.006	-1.9
90000	0.000618	0.000632	1799.8	1761.6	2910793	2788545	7678962	0.309	554.6	0.006	-2.0
100000	0.000726	0.000650	1718.2	1919.2	2367881	2954232	7819620	0.353	564.7	0.006	-2.0
152050	0.001234	0.000779	1237.0	1958.5	1002740	2513296	6539632	0.558	472.3	0.006	-2.0
179840	0.001404	0.000833	1112.9	1875.4	792925	2251769	6024575	0.588	435.1	0.006	-2.0
200000	0.001508	0.000884	1076.2	1836.6	713701	2078636	5652690	0.586	422.7	0.006	-1.9
237510	0.001657	0.000936	976.8	1729.7	589571	1848550	5384650	0.585	368.9	0.006	-1.9
251170	0.001712	0.000960	945.9	1687.7	552538	1758846	5228616	0.590	377.6	0.006	-2.0
262480	0.001763	0.000965	913.0	1666.8	517980	1726370	5088096	0.570	367.4	0.006	-1.9

Filename : AR11480
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks
Beam width (cm) : 4.699 Beam depth (cm) : 5.072 Bulk density (KN/m^3) : 22.73 Deflection (mm) : 0.2845

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000699	0.000612	4144.0	4728.8	5930252	7722400	9463388	0.618	1402.2	0.004	-2.2
11	0.000706	0.000599	3937.3	4642.5	5575021	7750670	9128291	0.602	1352.6	0.004	-2.2
21	0.000708	0.000615	3953.0	4546.4	5585364	7387993	9060030	0.611	1342.4	0.004	-2.2
33	0.000700	0.000603	3837.3	4453.2	5479732	7379719	8831806	0.631	1308.6	0.005	-2.2
40	0.000718	0.000593	3815.1	4620.3	5312322	7791350	8953158	0.611	1326.7	0.004	-2.2
50	0.000709	0.000597	3768.2	4473.0	5313149	7486591	8763545	0.631	1298.5	0.005	-2.2
60	0.000715	0.000611	3769.2	4412.7	5270262	7223202	8709764	0.632	1290.6	0.005	-2.2
70	0.000711	0.000605	3776.2	4436.5	5313287	7334212	8740102	0.637	1295.1	0.005	-2.2
80	0.000721	0.000602	3745.9	4487.7	5194417	7455564	8747687	0.633	1296.2	0.005	-2.2
90	0.000730	0.000602	3715.3	4506.2	5088924	7485902	8724933	0.637	1292.9	0.005	-2.2
100	0.000730	0.000599	3668.2	4471.2	5024387	7465217	8633919	0.645	1279.3	0.005	-2.2
200	0.000732	0.000606	3630.1	4379.4	4962194	7221823	8504293	0.659	1260.2	0.005	-2.2
300	0.000727	0.000612	3604.2	4279.5	4957022	6988083	8382941	0.656	1242.1	0.005	-2.2
400	0.000735	0.000592	3451.8	4286.6	4699218	7246645	8192639	0.647	1214.0	0.005	-2.1
500	0.000712	0.000578	3361.2	4140.9	4719490	7163216	7949246	0.613	1177.9	0.005	-2.2
600	0.000684	0.000575	3304.4	3929.3	4831671	6832049	7690683	0.552	1139.6	0.005	-2.1
700	0.000618	0.000541	3112.0	3557.8	5032798	6578037	7112193	0.451	1053.9	0.005	-2.0
800	0.000553	0.000504	2965.3	3254.9	5364448	6463097	6648504	0.345	985.1	0.004	-2.1
900	0.000504	0.000450	2756.6	3085.2	5473665	6856388	6237700	0.254	924.3	0.004	-2.1
1000	0.000450	0.000431	2661.3	2781.0	5914531	6458615	5826965	0.203	863.4	0.004	-2.0
1059	0.000431	0.000401	2488.7	2673.7	5779527	6670844	5522619	0.175	818.3	0.004	-2.1
1097	0.000407	0.000402	2486.0	2513.6	6111728	6248318	5355278	0.154	793.5	0.004	-2.1
1146	0.000367	0.000374	2449.8	2401.0	6683806	6420141	5195520	0.133	769.9	0.004	-2.1
1226	0.000356	0.000349	2290.9	2339.8	6433242	6711110	4959711	0.111	734.9	0.003	-2.0
1352	0.000305	0.000322	2213.2	2100.4	7245956	6526462	4617444	0.057	684.2	0.003	-2.0
1486	0.000288	0.000286	2011.6	2022.1	6995667	7068754	4320752	0.042	640.2	0.003	-2.1
1894	0.000232	0.000235	1790.4	1767.7	7702405	7508655	3811073	0.030	564.7	0.002	-1.9
2000	0.000215	0.000232	1823.5	1683.2	8498777	7241819	3750259	0.017	555.7	0.002	-2.0

Filename : AR4450

Material : Asphalt Rubber Concrete, Danby Street, Fairbanks

Rep	Tens strn	Comp strn	Tens strs	Comp strs
1	297	274	237	257
10	310	261	217	257
20	301	273	220	243
30	304	252	209	252
40	294	262	220	246
50	304	249	210	257
60	298	252	208	248
70	307	250	205	251
80	295	271	216	235
90	308	241	199	254
100	301	258	211	246
200	310	253	204	250
300	314	253	200	248
400	299	258	205	238
500	282	265	214	227
600	288	268	209	225
700	305	247	198	244
800	294	256	205	233
900	305	244	194	242
1000	305	250	193	236
2000	308	252	183	224
3000	313	256	174	212
4000	325	232	162	227
5000	314	234	165	222
6000	314	255	165	204
7000	316	243	159	207
8000	326	228	144	207
9000	341	231	145	215
10000	344	216	138	220
20000	367	229	121	193
30000	416	218	104	199
40000	462	223	89	184
50000	545	183	60	178

Beam width (in) : 1.808　　Bulk density (lb/ft^3) : 141.3

Beam depth (in) : 1.967　　Deflection (in) : 0.00695

Tens stiff	Comp stiff	Flex stiff	Disp engy	Max load	Phase lag	Temp
800300	936100	864290	0.01690	115	0.005	28.3
698660	986990	824310	0.01857	110	0.005	28.3
730890	890530	809080	0.01781	108	0.005	28.3
687750	1002100	801470	0.01458	107	0.005	28.3
748010	937160	812890	0.01679	108	0.005	28.3
692190	1032900	810990	0.01709	108	0.005	28.3
697780	977250	790050	0.01641	105	0.005	28.3
666640	1002300	790050	0.01579	105	0.005	28.3
731400	865650	788140	0.01693	105	0.005	28.3
645110	1053300	782430	0.01686	104	0.005	28.3
700180	954590	795760	0.01741	106	0.005	28.2
659280	986950	788140	0.01716	105	0.005	28.2
636390	980370	776720	0.01694	103	0.005	28.3
685030	924720	772910	0.01686	103	0.005	28.2
760280	857150	772910	0.01719	103	0.005	28.2
728230	837220	759590	0.01654	101	0.005	28.3
646840	986480	765300	0.01665	102	0.005	28.2
696810	903560	763390	0.01690	102	0.005	28.4
633750	990230	753880	0.01691	100	0.005	28.3
632530	941820	744360	0.01659	99	0.005	28.4
591770	887810	704380	0.01818	94	0.006	28.3
555740	828420	670110	0.01839	89	0.006	28.5
499160	974780	662500	0.01838	88	0.006	28.4
524280	946960	662500	0.01769	88	0.006	28.3
525460	800040	639650	0.01886	85	0.006	28.4
503370	851500	630130	0.01758	84	0.006	28.4
442490	906580	595870	0.01834	79	0.006	28.5
425750	929310	607290	0.01840	81	0.006	28.4
401990	1020200	595870	0.01755	79	0.006	28.3
330100	842310	521620	0.01859	69	0.006	28.3
250770	915770	479740	0.01985	64	0.007	28.1
192810	823510	420720	0.02170	56	0.007	28.1
109780	972040	314110	0.02265	42	0.008	28.2

Filename : AR5445

Material : Asphalt Rubber Concrete, Danby Street, Fairbanks

Rep	Tens stm	Comp strn	Tens strs	Comp strs
1	249	292	271	231
11	234	274	264	225
23	234	273	258	221
30	237	280	256	217
40	228	258	247	218
50	235	255	243	225
60	237	276	246	211
70	231	268	251	216
80	237	268	249	220
90	231	288	260	209
100	232	271	250	214
200	222	268	252	208
300	238	240	231	229
400	219	262	238	198
500	216	253	239	204
600	222	264	242	204
700	228	259	235	207
800	219	249	236	208
900	221	240	229	210
1000	215	253	232	197
2000	212	253	234	195
3000	203	256	237	188
4000	204	252	226	183
5000	195	237	226	186
6000	207	234	217	192
7000	194	247	227	178
6000	197	225	210	184
9000	201	223	208	187
10000	185	226	212	173
20000	150	167	158	143
30000	131	131	121	121
40000	92	106	109	95
50000	80	98	100	82
60000	83	80	80	83

Beam width (in) : 1.821 Bulk density (lb/ft^3) : 142.5

Beam depth (in) : 1.947 Deflection (in) : 0.00615

Tens stiff	Comp stiff	Flex stiff	Disp engy	Max load	Phase lag	Temp
1089000	790610	997740	0.01587	115	0.005	28.1
1126800	820400	971310	0.01195	112	0.004	28.1
1103200	811960	953690	0.01206	110	0.004	28.1
1082500	774300	940470	0.01181	108	0.005	28.1
1082900	846990	927260	0.01223	107	0.005	28.1
1032100	881130	933860	0.01169	107	0.005	28.1
1038000	766710	909640	0.01173	105	0.005	28.1
1086800	805900	929460	0.01162	107	0.005	28.1
1050100	819390	933860	0.01242	107	0.005	28.1
1126300	726470	927260	0.01274	107	0.005	28.1
1074900	789690	922850	0.01173	106	0.005	28.3
1133200	776460	911840	0.01168	105	0.004	28.3
968080	956090	920650	0.01181	106	0.004	28.2
1085000	756900	865590	0.00954	100	0.005	28.3
1106900	805270	881000	0.00888	101	0.005	28.0
1090300	772620	885410	0.00938	102	0.004	28.1
1032000	797950	881000	0.01074	101	0.004	28.3
1078900	835970	885410	0.00967	102	0.004	28.2
1037000	876310	876600	0.01015	101	0.004	28.4
1082400	776620	852370	0.01023	98	0.004	28.0
1106000	771680	852370	0.00878	98	0.004	28.4
1171800	732630	839160	0.00857	97	0.005	28.4
1105100	726240	808320	0.00841	93	0.005	28.3
1158000	786040	817130	0.00832	94	0.004	28.3
1049800	822880	817130	0.00847	94	0.004	28.4
1171100	718210	797310	0.00700	92	0.005	28.3
1068000	816110	784090	0.00824	90	0.004	28.0
1034000	837560	788500	0.00791	91	0.004	28.1
1147100	763420	762070	0.00635	88	0.005	28.2
1052900	856200	601290	0.00374	69	0.004	28.3
919310	919310	482350	0.00142	55	0.003	28.3
1175900	896650	405260	0.00044	47	0.002	28.3
1246500	834460	361210	0.00040	42	0.002	28.1
958840	1031200	325970	-0.00012	37	0.001	28.2

Filename : AR12450
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks
Beam width (cm) : 4.666 Beam depth (cm) : 5.019 Bulk density (KN/m^3) : 22.67 Deflection (mm) : 0.1702

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000395	0.000423	3673.5	3427.7	9304113	8100246	12835732	0.116	1094.5	0.002	-11.9
11	0.000378	0.000396	3562.9	3402.1	9414433	8584275	12597165	0.090	1074.2	0.002	-11.9
21	0.000389	0.000413	3594.8	3387.2	9244127	8207119	12624056	0.094	1076.4	0.002	-11.9
33	0.000383	0.000408	3573.1	3351.5	9331004	8209187	12517873	0.093	1067.4	0.002	-11.9
40	0.000378	0.000420	3657.0	3293.9	9663343	7839615	12544763	0.095	1069.6	0.002	-11.9
50	0.000374	0.000408	3636.3	3331.0	9723329	8159543	12584065	0.082	1073.0	0.002	-11.9
60	0.000378	0.000404	3585.8	3360.8	9475109	8323644	12557864	0.090	1070.8	0.002	-11.9
70	0.000378	0.000411	3631.4	3341.9	9595082	8126447	12597165	0.095	1074.2	0.002	-11.9
80	0.000374	0.000414	3671.7	3315.1	9817791	8003716	12610955	0.092	1075.3	0.002	-11.9
90	0.000374	0.000402	3616.2	3361.7	9669548	8356740	12610955	0.097	1075.3	0.002	-11.9
100	0.000372	0.000414	3675.5	3305.3	9867435	7979584	12597165	0.094	1074.2	0.002	-11.9
200	0.000375	0.000410	3612.8	3310.6	9621973	8079561	12504772	0.093	1066.3	0.002	-11.9
300	0.000377	0.000398	3580.7	3393.0	9498552	8529115	12610955	0.091	1075.3	0.002	-11.9
400	0.000375	0.000401	3586.7	3360.1	9552333	8383631	12557864	0.080	1070.8	0.002	-11.9
500	0.000389	0.000414	3586.4	3367.1	9222752	8129205	12570964	0.097	1071.9	0.002	-11.9
600	0.000380	0.000405	3592.8	3368.3	9456493	8311233	12584065	0.091	1073.0	0.002	-11.9
700	0.000374	0.000410	3643.2	3325.3	9741946	8115415	12584065	0.091	1073.0	0.002	-11.8
800	0.000386	0.000407	3574.7	3391.4	9263433	8337434	12597165	0.092	1074.2	0.002	-11.8
900	0.000375	0.000408	3640.2	3347.9	9695060	8200913	12624056	0.100	1076.4	0.002	-11.7
1000	0.000375	0.000401	3616.9	3388.3	9633005	8453960	12663357	0.091	1079.8	0.002	-11.8
2000	0.000371	0.000393	3596.8	3392.4	9695060	8624266	12637156	0.090	1077.6	0.002	-11.9
3000	0.000343	0.000402	3787.3	3226.2	11051306	8019575	12610955	0.085	1075.3	0.002	-12.0
4000	0.000326	0.000389	3742.3	3140.1	11469143	8074735	12359288	0.069	1053.9	0.002	-12.0
5000	0.000329	0.000374	3541.3	3118.1	10754821	8337434	12002816	0.070	1023.5	0.002	-12.0
6000	0.000297	0.000352	3460.9	2918.3	11672546	8299512	11460869	0.054	977.2	0.002	-11.9
7000	0.000297	0.000337	3311.1	2915.6	11167142	8658741	11222992	0.045	957.0	0.002	-12.0
8000	0.000288	0.000322	3165.6	2828.5	11008557	8789057	10812739	0.038	922.0	0.002	-12.0
9000	0.000258	0.000311	3149.2	2606.8	12217251	8371220	10323884	0.028	880.3	0.002	-12.0
9752	0.000276	0.000292	2816.9	2658.8	10219080	9104158	9900531	0.026	844.3	0.001	-12.0
10000	0.000250	0.000283	2864.1	2532.5	11442253	8945573	9728845	0.014	829.6	0.002	-12.0
12740	0.000207	0.000232	2484.3	2213.6	11995232	9523374	8473266	0.009	722.5	0.001	-12.0
14921	0.000176	0.000215	2380.1	1950.3	13537643	9090368	7759633	0.004	661.6	0.001	-12.0
17956	0.000155	0.000188	2164.7	1786.7	13969960	9517169	7085302	0.003	604.1	0.001	-12.0
20000	0.000148	0.000171	2021.1	1739.9	13701744	10154267	6767994	0.002	577.1	0	-12.0
24473	0.000115	0.000164	2124.3	1487.0	18516523	9073131	6331747	0.000	539.9	0	-12.0

Filename : AR13440
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks
Beam width (cm) : 4.740 Beam depth (cm) : 4.938 Bulk density (KN/m^3) : 22.76 Deflection (mm) : 0.1321

Rep	Tens strn (m/m)	Comp str (m/m)	Tens strs (KPa)	Comp str (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000322	0.000283	3439.0	3909.5	10685182	13809996	17345062	0.025	1110.2	0.001	-12.5
13	0.000307	0.000285	3404.2	3671.6	11091297	12901924	16745887	0.034	1071.9	0.001	-12.5
20	0.000308	0.000285	3374.9	3657.6	10942365	12852280	16640393	0.042	1065.2	0.001	-12.5
30	0.000305	0.000282	3352.1	3635.9	10974772	12911577	16534900	0.038	1058.4	0.001	-12.5
40	0.000301	0.000283	3381.0	3594.6	11234024	12697832	16516973	0.028	1057.3	0.001	-12.5
50	0.000310	0.000282	3314.8	3648.0	10695524	12954326	16464571	0.034	1053.9	0.001	-12.5
60	0.000307	0.000286	3359.0	3603.9	10943744	12597855	16481608	0.030	1055.0	0.001	-12.5
70	0.000305	0.000292	3386.3	3541.8	11086471	12128305	16411479	0.032	1050.5	0.001	-12.5
80	0.000313	0.000285	3277.3	3603.3	10474195	12661978	16270821	0.042	1041.5	0.002	-12.5
90	0.000310	0.000291	3350.5	3573.8	10811360	12300680	16393552	0.044	1049.4	0.001	-12.5
100	0.000304	0.000291	3364.1	3519.3	11067854	12113136	16305986	0.036	1043.7	0.002	-12.5
200	0.000310	0.000286	3300.5	3575.5	10650017	12498567	16270821	0.033	1041.5	0.002	-12.6
300	0.000310	0.000288	3305.2	3562.1	10665186	12386868	16252894	0.045	1040.4	0.002	-12.6
400	0.000308	0.000280	3282.1	3613.8	10641743	12901235	16305986	0.040	1043.7	0.001	-12.5
500	0.000301	0.000297	3418.1	3469.6	11356755	11702194	16323223	0.044	1044.9	0.001	-12.5
600	0.000320	0.000282	3242.4	3688.5	10121860	13098432	16358388	0.041	1047.1	0.001	-12.5
700	0.000291	0.000285	3397.4	3468.5	11693231	12188292	16270821	0.039	1041.5	0.001	-12.5
800	0.000301	0.000291	3354.8	3475.2	11146457	11961446	16182565	0.042	1035.9	0.002	-12.4
900	0.000316	0.000276	3203.6	3671.0	10141856	13316382	16217730	0.048	1038.1	0.002	-12.5
1000	0.000304	0.000295	3371.1	3473.2	11090608	11773213	16217730	0.042	1038.1	0.002	-12.5
2000	0.000316	0.000298	3331.8	3531.7	10547971	11851816	16252894	0.040	1040.4	0.001	-12.4
3000	0.000311	0.000294	3305.1	3506.5	10613474	11946277	16129474	0.042	1032.5	0.002	-12.5
4000	0.000311	0.000285	3267.0	3574.9	10491432	12562001	16182565	0.042	1035.9	0.002	-12.5
5000	0.000316	0.000291	3262.9	3547.3	10329400	12208977	16112236	0.040	1031.3	0.002	-12.5
6000	0.000304	0.000285	3305.2	3530.2	10874105	12404795	16182565	0.039	1035.9	0.002	-12.4
7000	0.000314	0.000283	3222.9	3579.1	10251486	12642672	16077072	0.052	1029.1	0.002	-12.5
8000	0.000305	0.000294	3336.4	3471.9	10923059	11828373	16129474	0.042	1032.5	0.002	-12.4
9000	0.000307	0.000288	3281.1	3502.0	10690008	12178639	16059145	0.033	1028.0	0.002	-12.5
10000	0.000307	0.000291	3322.8	3510.2	10825840	12082109	16182565	0.030	1035.9	0.001	-12.5
20000	0.000304	0.000273	3213.6	3582.4	10572793	13138423	16059145	0.033	1028.0	0.001	-12.5
30000	0.000307	0.000261	3126.2	3679.9	10185294	14113376	16023980	0.036	1025.7	0.001	-12.5
40000	0.000292	0.000267	3226.8	3533.3	11049238	13248053	15988816	0.035	1023.5	0.001	-12.5
50000	0.000294	0.000259	3176.2	3596.0	10821013	13870672	15988816	0.021	1023.5	0.001	-12.4
60000	0.000283	0.000249	3165.4	3601.4	11181622	14473984	15971578	0.021	1022.3	0.001	-12.5
70000	0.000285	0.000247	3152.3	3627.1	11076818	14664976	15988816	0.047	1023.5	0.001	-12.5
80000	0.000304	0.000238	3009.3	3836.9	9900531	16094999	15988816	0.022	1023.5	0.001	-12.5
90000	0.000298	0.000243	3057.7	3751.8	10261139	15448248	15971578	0.048	1022.3	0.001	-12.5
100000	0.000277	0.000243	3168.0	3615.0	11431221	14884926	16006743	0.042	1024.6	0.001	-12.5
200277	0.000261	0.000256	3182.1	3237.6	12204150	12633709	15213818	0.021	973.8	0.001	-12.3
260277	0.000270	0.000252	3121.2	3342.8	11573947	13275633	15302074	0.019	979.5	0.001	-12.4
332017	0.000282	0.000241	2976.9	3473.1	10571414	14389176	15196580	0.029	972.7	0.001	-12.3
380277	0.000256	0.000244	3080.5	3230.9	12020743	13221852	14949739	0.024	957.0	0.001	-12.3
456697	0.000244	0.000229	2892.1	3079.9	11835957	13422497	14139577	0.004	905.1	0	-12.3
480277	0.000238	0.000223	2814.3	3001.9	11804930	13431460	13770005	0.023	881.4	0.001	-12.4
529067	0.000244	0.000241	2817.2	2852.0	11529130	11815272	13435597	0.008	860.0	0	-12.3
580277	0.000221	0.000216	2706.4	2762.4	12273100	12786778	12959842	0.022	829.6	0.001	-12.4
610767	0.000228	0.000235	2737.3	2650.6	12007643	11259535	12766093	0.038	817.2	0	-12.3
680277	0.000219	0.000200	2407.3	2640.9	10991320	13227368	11938693	0.018	764.2	0.001	-12.3
705057	0.000194	0.000203	2550.2	2437.7	13166003	12029707	11815272	0.003	756.3	0.001	-12.3
764967	0.000201	0.000180	2254.3	2515.1	11207133	13950654	11269878	0.015	721.4	0.001	-12.3
780277	0.000182	0.000177	2322.6	2381.2	12777125	13429392	11146457	0.001	713.5	0.001	-12.4

Filename : AR14460
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks
Beam width (cm) : 4.666 Beam depth (cm) : 5.083 Bulk density (KN/m^3) : 22.74 Deflection (mm) : 0.2032

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000502	0.000463	4691.2	5083.3	9342725	10969945	14605679	0.203	1544.2	0.002	-12.4
11	0.000487	0.000459	4592.4	4875.7	9425465	10624506	14157504	0.181	1496.8	0.002	-12.4
23	0.000492	0.000454	4536.9	4908.8	9227579	10801707	14114755	0.183	1492.4	0.002	-12.4
30	0.000493	0.000448	4454.2	4898.2	9031761	10921680	13965823	0.179	1476.6	0.002	-12.4
40	0.000490	0.000465	4548.6	4796.4	9279291	10317678	13976165	0.186	1477.7	0.002	-12.4
50	0.000478	0.000457	4605.8	4815.8	9630247	10527976	14094070	0.199	1490.1	0.002	-12.4
60	0.000490	0.000451	4512.2	4899.3	9204825	10852041	14061663	0.192	1486.7	0.002	-12.4
70	0.000502	0.000457	4461.4	4897.4	8885587	10706556	13976165	0.183	1477.7	0.002	-12.4
80	0.000496	0.000459	4514.6	4881.0	9099332	10636227	14040289	0.206	1484.5	0.002	-12.4
90	0.000492	0.000459	4527.4	4850.8	9207583	10570035	14018914	0.199	1482.2	0.002	-12.4
100	0.000499	0.000460	4491.5	4869.4	8998665	10576241	13987197	0.187	1478.8	0.002	-12.4
200	0.000489	0.000457	4540.5	4851.0	9291013	10605200	14040289	0.216	1484.5	0.002	-12.3
300	0.000499	0.000450	4456.2	4943.2	8927646	10985804	14029946	0.220	1483.3	0.002	-12.4
400	0.000487	0.000474	4626.1	4757.0	9495105	10039810	14040289	0.217	1484.5	0.002	-12.4
500	0.000496	0.000462	4521.7	4857.3	9113811	10516254	14018914	0.221	1482.2	0.002	-12.4
600	0.000508	0.000463	4484.3	4916.9	8826290	10610716	14040289	0.225	1484.5	0.002	-12.4
700	0.000501	0.000480	4592.9	4792.6	9174487	9989476	14040289	0.229	1484.5	0.003	-12.4
800	0.000510	0.000463	4433.8	4875.8	8701490	10522460	13901699	0.222	1469.8	0.003	-12.4
900	0.000511	0.000469	4475.3	4873.0	8756650	10383181	13965823	0.241	1476.6	0.003	-12.4
1000	0.000513	0.000459	4411.4	4927.0	8607029	10736205	13934106	0.242	1473.2	0.003	-12.4
2000	0.000524	0.000477	4378.8	4816.7	8349156	10102554	13731393	0.262	1451.8	0.003	-12.3
3000	0.000532	0.000478	4332.4	4818.2	8145064	10074285	13656927	0.285	1443.9	0.003	-12.3
4000	0.000562	0.000481	4133.1	4824.2	7358344	10023951	13325967	0.308	1409.0	0.003	-12.4
5000	0.000609	0.000495	3997.4	4924.5	6559696	9955001	13208752	0.368	1396.5	0.003	-12.4
6000	0.000665	0.000514	3872.1	5005.7	5826896	9737809	13070162	0.407	1381.9	0.003	-12.4
7000	0.000706	0.000530	3748.2	4990.5	5307219	9408228	12814358	0.446	1354.8	0.003	-12.4
8000	0.000749	0.000539	3714.7	5161.6	4956609	9569571	12931573	0.478	1367.2	0.003	-12.3
9000	0.000796	0.000541	3610.6	5311.4	4537944	9820549	12867449	0.522	1360.5	0.003	-12.4
10000	0.000828	0.000551	3523.4	5294.7	4253250	9604046	12665426	0.553	1339.0	0.003	-12.4
20000	0.001410	0.000624	2695.5	6085.7	1912328	9748151	11183001	0.987	1182.4	0.004	-12.4
30000	0.002286	0.000739	2121.0	6559.5	927929	8875934	9595082	1.388	1014.4	0.004	-12.4
31407	0.002411	0.000751	2031.9	6523.0	842845	8686321	9275154	1.340	980.6	0.004	-12.4
52071	0.002691	0.000872	1490.0	4600.0	553737	5277502	6737725	0.997	712.4	0.004	-12.4
52081	0.002685	0.000863	1456.5	4533.0	542478	5254542	6599136	1.001	697.7	0.005	-12.5
52144	0.003250	0.000869	1430.9	5352.7	440308	6162130	6759031	1.137	714.6	0.004	-12.4

Filename : AR15465
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks
Beam width (cm) : 4.666 Beam depth (cm) : 5.116 Bulk density (KN/m^3) : 22.89 Deflection (mm) : 0.2159

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000513	0.000516	4643.7	4616.9	9060030	8955916	12960532	0.184	1484.5	0.002	-12.3
13	0.000507	0.000502	4375.3	4414.2	8636677	8791125	12300680	0.158	1409.0	0.002	-12.3
20	0.000499	0.000508	4469.5	4390.9	8954537	8642193	12399279	0.148	1420.2	0.002	-12.3
30	0.000501	0.000517	4509.5	4366.6	9007628	8445686	12419274	0.160	1422.5	0.002	-12.3
40	0.000507	0.000513	4558.5	4505.5	8998665	8790436	12684732	0.188	1452.9	0.002	-12.3
50	0.000508	0.000514	4569.0	4516.0	8992459	8785609	12714380	0.172	1456.3	0.002	-12.3
60	0.000520	0.000501	4495.7	4669.6	8645641	9327556	12822632	0.173	1468.7	0.002	-12.3
70	0.000521	0.000508	4536.0	4655.8	8698043	9163455	12861933	0.183	1473.2	0.002	-12.3
80	0.000510	0.000505	4553.9	4594.3	8936610	9095884	12802636	0.173	1466.4	0.002	-12.3
90	0.000505	0.000508	4668.6	4641.2	9242748	9135186	13029482	0.185	1492.4	0.002	-12.3
100	0.000510	0.000511	4675.8	4662.1	9175866	9122775	13068783	0.189	1496.8	0.002	-12.3
200	0.000521	0.000514	4761.3	4830.3	9130359	9396506	13422497	0.182	1537.4	0.002	-12.3
300	0.000530	0.000526	4831.3	4872.4	9108295	9264122	13580392	0.191	1555.5	0.002	-12.3
400	0.000526	0.000524	4894.1	4907.9	9304803	9357894	13718292	0.194	1571.3	0.002	-12.3
500	0.000524	0.000532	4985.4	4915.5	9505447	9241369	13855503	0.215	1587.0	0.002	-12.3
600	0.000548	0.000520	4853.3	5117.5	8851112	9841234	13944448	0.229	1597.2	0.002	-12.4
700	0.000535	0.000533	4967.9	4981.8	9287565	9339278	13924453	0.221	1594.9	0.002	-12.3
800	0.000548	0.000536	4948.5	5058.5	9024866	9430981	14003056	0.225	1604.0	0.002	-12.3
900	0.000545	0.000536	4972.4	5055.3	9117948	9424776	14032704	0.232	1607.3	0.002	-12.3
1000	0.000538	0.000539	5013.4	4999.6	9320661	9269638	14013398	0.234	1605.1	0.002	-12.4
2000	0.000572	0.000557	4958.6	5091.2	8667015	9136565	14062353	0.301	1610.7	0.003	-12.4
3000	0.000630	0.000554	4708.0	5353.4	7470043	9658516	14023051	0.371	1606.2	0.003	-12.4
4000	0.000663	0.000578	4662.8	5347.8	7032211	9250332	13944448	0.410	1597.2	0.003	-12.4
5000	0.000712	0.000557	4436.7	5670.5	6229633	10175641	13934795	0.463	1596.0	0.003	-12.4
6000	0.000730	0.000592	4477.3	5526.1	6132551	9342036	13845850	0.494	1585.9	0.003	-12.5
7000	0.000796	0.000594	4253.8	5693.1	5346452	9576466	13629347	0.564	1561.1	0.003	-12.4
8000	0.000876	0.000603	4022.5	5840.1	4591449	9678512	13334241	0.617	1527.3	0.003	-12.4
9000	0.000960	0.000617	3890.1	6051.2	4054122	9810206	13255638	0.699	1518.3	0.003	-12.4
10000	0.001034	0.000644	3784.8	6080.1	3660211	9446150	13058441	0.768	1495.7	0.003	-12.4
12418	0.001240	0.000693	3499.4	6261.3	2822951	9037277	12566827	0.928	1439.4	0.004	-12.4
17994	0.002177	0.000903	2641.2	6367.7	1213313	7052206	10450752	1.529	1197.1	0.004	-12.4
20000	0.002861	0.001085	2189.2	5773.9	765276	5323009	8886276	1.954	1017.8	0.005	-12.4
21096	0.003195	0.001153	2079.0	5759.1	650840	4993911	8551869	1.924	979.5	0.005	-12.4
29440	0.003285	0.001420	1583.6	3664.1	482016	2580454	6189848	1.159	709.0	0.005	-12.4
30000	0.003281	0.001439	1583.2	3608.9	482547	2507367	6160338	1.321	705.6	0.005	-12.4

Filename : AR17470
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks
Beam width (cm) : 4.653 Beam depth (cm) : 5.039 Bulk density (KN/m^3) : 22.94 Deflection (mm) : 0.2362

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000620	0.000641	5463.3	5285.4	8814568	8249868	13953412	0.521	1667.1	0.004	-12.4
13	0.000600	0.000629	5228.1	4992.7	8707006	7940282	13264601	0.398	1584.8	0.003	-12.4
20	0.000593	0.000609	5137.7	4999.6	8664257	8204361	13160487	0.395	1572.4	0.003	-12.4
30	0.000611	0.000608	5073.5	5098.4	8305028	8387078	13208062	0.386	1578.0	0.003	-12.4
40	0.000605	0.000606	5052.2	5039.8	8351914	8310544	13103948	0.384	1565.6	0.003	-12.4
50	0.000608	0.000602	4963.4	5012.5	8165059	8327092	12952947	0.404	1547.6	0.003	-12.4
60	0.000608	0.000611	5007.3	4982.9	8236767	8156785	12972253	0.380	1549.8	0.003	-12.4
70	0.000599	0.000611	5066.8	4967.9	8459476	8132653	13028792	0.373	1556.6	0.003	-12.4
80	0.000620	0.000587	4831.2	5100.9	7794108	8689079	12886755	0.387	1539.7	0.003	-12.4
90	0.000614	0.000603	4913.0	4997.9	8003716	8282274	12868139	0.386	1537.4	0.003	-12.4
100	0.000612	0.000605	4928.6	4989.3	8048534	8247799	12877792	0.378	1538.5	0.003	-12.4
200	0.000603	0.000574	4655.6	4897.4	7715505	8537389	12396521	0.358	1481.1	0.003	-12.4
300	0.000586	0.000563	4543.4	4723.7	7758944	8387078	12028328	0.348	1437.1	0.003	-12.4
400	0.000557	0.000554	4398.4	4422.0	7893396	7978205	11453285	0.334	1368.4	0.003	-12.5
500	0.000508	0.000496	3945.6	4040.4	7765839	8143685	10368012	0.259	1238.7	0.003	-12.4
600	0.000462	0.000454	3610.7	3669.9	7817551	8075424	9453045	0.182	1129.4	0.003	-12.4
700	0.000410	0.000401	3294.9	3368.4	8041639	8404316	8651157	0.156	1033.6	0.003	-12.4
800	0.000383	0.000368	2978.0	3098.5	7776871	8419485	7887191	0.124	942.3	0.003	-12.4
900	0.000341	0.000340	2780.3	2792.5	8148511	8220219	7236303	0.094	864.5	0.003	-12.4
1000	0.000302	0.000307	2598.3	2560.5	8590481	8342261	6698217	0.067	800.3	0.002	-12.4
1059	0.000295	0.000285	2398.1	2486.0	8128516	8735276	6339746	0.059	757.4	0.002	-12.5
1103	0.000277	0.000270	2351.1	2416.0	8483608	8958674	6188814	0.051	739.4	0.002	-12.4
1138	0.000258	0.000271	2359.4	2242.7	9153113	8270553	5971828	0.046	713.5	0.002	-12.4
1173	0.000271	0.000255	2163.1	2302.2	7976826	9035898	5792558	0.049	692.1	0.002	-12.4
1208	0.000240	0.000253	2248.0	2129.0	9371684	8405695	5679343	0.036	678.5	0.002	-12.4
1243	0.000249	0.000241	2111.2	2176.4	8484987	9016592	5566127	0.030	665.0	0.002	-12.5
1278	0.000244	0.000241	2079.7	2105.4	8511188	8722865	5434087	0.034	649.3	0.002	-12.5
1313	0.000228	0.000244	2118.8	1976.7	9294460	8089214	5311425	0.030	634.6	0.002	-12.5
1348	0.000229	0.000226	1992.2	2018.5	8682874	8912477	5207656	0.022	622.2	0.002	-12.4
1383	0.000213	0.000225	2027.8	1920.3	9517169	8535321	5122709	0.026	612.1	0.002	-12.4
1418	0.000203	0.000218	1996.2	1859.4	9850887	8547732	5000116	0.023	597.4	0.002	-12.4
2000	0.000137	0.000153	1640.1	1464.9	11964894	9545438	4018958	0.001	480.2	0.001	-12.5

Filename : AR18455
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks
Beam width (cm) : 4.638 Beam depth (cm) : 5.070 Bulk density (KN/m^3) : 22.86 Deflection (mm) : 0.1880

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000592	0.000544	4012.3	4364.1	6783094	8024401	13563155	0.405	1308.6	0.003	-12.4
11	0.000578	0.000535	3826.9	4136.1	6619890	7732743	12897098	0.296	1244.4	0.003	-12.4
21	0.000559	0.000523	3862.2	4126.4	6912238	7889949	12943984	0.283	1248.9	0.003	-12.4
33	0.000578	0.000524	3749.9	4133.4	6486540	7880985	12757129	0.289	1230.9	0.003	-12.4
40	0.000578	0.000530	3804.7	4146.7	6581346	7817551	12873655	0.292	1242.1	0.003	-12.4
50	0.000565	0.000521	3799.2	4114.0	6727865	7889259	12815047	0.275	1236.5	0.003	-12.4
60	0.000565	0.000523	3818.2	4122.9	6761651	7883743	12861933	0.294	1241.0	0.003	-12.4
70	0.000575	0.000521	3776.4	4164.9	6566246	7986479	12850212	0.280	1239.9	0.003	-12.4
80	0.000584	0.000514	3747.4	4257.9	6416004	8282964	12932262	0.294	1247.8	0.003	-12.4
90	0.000572	0.000519	3758.3	4147.1	6568798	7998200	12791604	0.282	1234.3	0.003	-12.4
100	0.000572	0.000514	3756.5	4181.2	6565764	8134032	12838490	0.279	1238.7	0.003	-12.3
200	0.000574	0.000530	3763.4	4070.0	6560661	7672756	12686800	0.284	1224.1	0.003	-12.4
300	0.000581	0.000520	3698.3	4132.8	6364568	7947867	12663357	0.297	1221.8	0.003	-12.3
400	0.000584	0.000523	3696.0	4127.7	6328024	7892707	12651636	0.297	1220.7	0.003	-12.3
500	0.000590	0.000520	3624.4	4112.5	6142893	7908565	12499946	0.297	1206.0	0.003	-12.3
600	0.000584	0.000527	3666.3	4059.9	6277277	7697578	12499946	0.308	1206.0	0.003	-12.3
700	0.000593	0.000520	3612.6	4119.8	6091939	7922355	12488224	0.310	1204.9	0.003	-12.3
800	0.000587	0.000523	3642.8	4089.1	6205431	7818930	12499946	0.317	1206.0	0.003	-12.3
900	0.000615	0.000513	3511.4	4215.7	5706371	8225046	12429617	0.301	1199.3	0.003	-12.4
1000	0.000602	0.000527	3560.6	4063.5	5915221	7704473	12313091	0.315	1188.0	0.003	-12.3
2000	0.000623	0.000511	3399.2	4142.5	5458013	8105762	12114515	0.325	1168.8	0.003	-12.4
3000	0.000620	0.000511	3367.2	4083.8	5432502	7991305	11973857	0.328	1155.4	0.003	-12.4
4000	0.000629	0.000513	3281.3	4025.3	5218688	7853405	11729085	0.329	1131.7	0.003	-12.4
5000	0.000633	0.000526	3246.6	3908.8	5126984	7431431	11507066	0.341	1110.2	0.003	-12.4
6000	0.000650	0.000524	3224.9	3994.4	4964193	7616217	11576705	0.333	1117.0	0.003	-12.4
7000	0.000632	0.000513	3179.8	3919.3	5033350	7646555	11389851	0.337	1099.0	0.003	-12.4
8000	0.000653	0.000505	3082.3	3982.4	4723075	7884433	11273325	0.347	1087.7	0.003	-12.4
9000	0.000648	0.000514	3109.0	3920.1	4796920	7625870	11249882	0.331	1085.4	0.003	-12.4
10000	0.000650	0.000508	3025.8	3868.8	4657848	7614838	11016142	0.335	1062.9	0.003	-12.4
20000	0.000586	0.000435	2532.6	3408.6	4325165	7834789	9427534	0.262	909.6	0.003	-12.4
30000	0.000440	0.000335	1983.6	2600.7	4512984	7757565	7301116	0.157	704.5	0.003	-12.4
40000	0.000340	0.000262	1665.3	2157.4	4902345	8227114	6098076	0.096	588.4	0.003	-12.3
50000	0.000289	0.000221	1444.2	1893.1	4996393	8584965	5315356	0.070	512.9	0.003	-12.4
55889	0.000274	0.000219	1451.1	1816.3	5292878	8292617	5233581	0.058	505.0	0.003	-12.4

Filename : AR31467
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks

Beam width (cm) : 4.597 Beam depth (cm) : 5.039 Bulk density (KN/m^3) : 22.22 Deflection (mm) : 0.2362

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000463	0.000419	3849.5	4260.6	8307786	10176331	10503843	0.376	1239.9	0.004	-12.7
13	0.000463	0.000417	3612.5	4012.4	7796177	9617836	9873640	0.223	1165.5	0.003	-12.7
20	0.000457	0.000410	3568.9	3984.3	7802382	9724019	9777800	0.207	1154.2	0.002	-12.7
30	0.000469	0.000408	3458.3	3975.7	7368687	9738498	9606114	0.207	1133.9	0.002	-12.7
40	0.000465	0.000408	3425.4	3900.4	7368687	9554402	9472351	0.204	1118.2	0.002	-12.7
50	0.000459	0.000405	3403.2	3853.6	7415573	9508895	9386164	0.197	1108.0	0.002	-12.7
60	0.000471	0.000395	3278.8	3909.8	6963950	9902599	9262054	0.194	1093.3	0.002	-12.7
70	0.000474	0.000410	3318.6	3837.6	7003941	9366168	9243437	0.205	1091.1	0.002	-12.7
80	0.000468	0.000402	3292.8	3829.4	7038416	9519237	9195172	0.194	1085.4	0.002	-12.7
90	0.000466	0.000393	3243.4	3845.4	6954987	9775731	9137944	0.196	1078.7	0.002	-12.7
100	0.000469	0.000395	3215.9	3822.7	6851906	9681270	9071062	0.193	1070.8	0.002	-12.5
200	0.000475	0.000399	3112.4	3704.7	6548250	9277912	8784920	0.196	1037.0	0.002	-12.6
300	0.000483	0.000386	2940.9	3679.0	6092008	9533717	8489124	0.190	1002.1	0.002	-12.7
400	0.000478	0.000390	2921.6	3579.6	6108694	9169661	8355361	0.190	986.3	0.002	-12.7
500	0.000474	0.000377	2809.3	3531.0	5929148	9366858	8125758	0.188	959.2	0.002	-12.6
600	0.000465	0.000386	2779.2	3347.9	5978448	8675289	7887191	0.175	931.0	0.002	-12.6
700	0.000462	0.000374	2681.6	3311.9	5805728	8855938	7696199	0.170	908.5	0.002	-12.6
800	0.000451	0.000380	2637.5	3133.9	5842134	8248489	7438326	0.164	878.1	0.002	-12.7
900	0.000450	0.000359	2528.8	3168.9	5619908	8824911	7304563	0.152	862.3	0.002	-12.6
1000	0.000437	0.000361	2507.6	3036.1	5744087	8420174	7132878	0.150	842.0	0.002	-12.6
2000	0.000381	0.000317	2165.7	2602.9	5677895	8201603	6139860	0.090	724.8	0.002	-12.6
3000	0.000344	0.000302	1968.9	2240.4	5720368	7407299	5442844	0.069	642.5	0.002	-12.7
4000	0.000308	0.000267	1782.7	2061.5	5780079	7729985	4965365	0.066	586.1	0.002	-12.7
5000	0.000285	0.000249	1664.4	1903.6	5848546	7650003	4612066	0.047	544.4	0.002	-12.6
6000	0.000282	0.000232	1530.3	1854.0	5434294	7976826	4354261	0.054	514.0	0.002	-12.6
7000	0.000258	0.000216	1422.7	1697.5	5519516	7856853	4020061	0.037	474.5	0.002	-12.6
8000	0.000241	0.000215	1420.3	1597.8	5884331	7447290	3905466	0.039	461.0	0.002	-12.6
9000	0.000229	0.000204	1351.4	1519.1	5889571	7441774	3714474	0.026	438.5	0.002	-12.7
10000	0.000222	0.000203	1294.1	1417.8	5829102	6997046	3513968	0.019	414.8	0.002	-12.7

Filename : AR16450
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks
Beam width (cm) : 4.704 Beam depth (cm) : 5.055 Bulk density (KN/m^3) : 22.78 Deflection (mm) : 0.1626

Rep	Tens stm (m/m)	Comp stm (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000456	0.000460	5649.8	5594.9	12391694	12152438	21152481	0.097	1774.1	0.001	-28.6
11	0.000440	0.000422	5269.9	5493.4	11989716	13028103	20238894	0.021	1697.5	0.001	-28.6
21	0.000448	0.000393	4968.3	5664.5	11078197	14400897	19916208	0.044	1670.4	0.001	-28.6
33	0.000444	0.000420	5130.6	5421.7	11555331	12903993	19835536	0.029	1663.7	0.001	-28.6
40	0.000438	0.000413	5092.0	5404.5	11624281	13094984	19727974	0.042	1654.6	0.001	-28.6
50	0.000429	0.000402	5072.8	5411.0	11821478	13450766	19701084	0.030	1652.4	0.001	-28.6
60	0.000434	0.000402	5026.8	5417.8	11593943	13467314	19620412	0.016	1645.7	0.001	-28.6
70	0.000443	0.000383	4850.5	5605.4	10960982	14638775	19566631	0.019	1641.1	0.001	-28.6
80	0.000428	0.000402	5032.8	5349.7	11769765	13298387	19512850	0.021	1636.6	0.001	-28.6
90	0.000432	0.000395	4962.9	5431.1	11485691	13754836	19512850	0.028	1636.6	0.001	-28.6
100	0.000426	0.000395	4982.3	5377.1	11691852	13618315	19459069	0.036	1632.1	0.001	-28.4
200	0.000434	0.000386	4840.5	5438.6	11164384	14093380	19270836	0.031	1616.3	0.001	-28.5
300	0.000426	0.000393	4918.3	5328.1	11541541	13545228	19243945	0.020	1614.1	0.001	-28.5
400	0.000422	0.000387	4872.8	5303.9	11556710	13691402	19109493	0.010	1602.8	0.001	-28.4
500	0.000428	0.000398	4909.2	5276.9	11480175	13264601	19136383	0.000	1605.1	0.001	-28.4
600	0.000423	0.000387	4844.2	5291.3	11447769	13658995	19028821	0.008	1596.0	0.001	-28.5
700	0.000414	0.000395	4946.5	5189.2	11942140	13142560	19055712	0.000	1598.3	0.001	-28.5
800	0.000420	0.000398	4937.2	5214.6	11750459	13108085	19082602	0.015	1600.6	0.001	-28.4
900	0.000426	0.000389	4850.4	5315.0	11382266	13667269	19082602	0.007	1600.6	0.001	-28.4
1000	0.000417	0.000395	4915.4	5193.7	11782176	13153592	19001931	0.013	1593.8	0.001	-28.4
2000	0.000422	0.000383	4805.1	5291.2	11395367	13818270	18948150	0.005	1589.3	0.001	-28.3
3000	0.000431	0.000387	4749.8	5279.6	11030621	13628657	18814387	0.017	1578.0	0.001	-28.4
4000	0.000440	0.000383	4665.2	5355.1	10614163	13984439	18760606	0.036	1573.5	0.001	-28.5
5000	0.000428	0.000381	4696.8	5265.6	10983735	13805169	18679934	0.034	1566.8	0.001	-28.4
6000	0.000422	0.000390	4773.9	5156.5	11321590	13209441	18653044	0.010	1564.5	0.001	-28.3
7000	0.000423	0.000393	4790.2	5153.0	11320211	13100500	18679934	0.013	1566.8	0.001	-28.4
8000	0.000425	0.000371	4631.3	5300.9	10906511	14287819	18599263	0.033	1560.0	0.001	-28.4
9000	0.000434	0.000384	4643.0	5236.9	10708625	13623141	18518591	0.025	1553.2	0.001	-28.4
10000	0.000425	0.000375	4623.6	5229.2	10888584	13927211	18464810	0.032	1548.7	0.001	-28.3
20000	0.000417	0.000381	4581.2	5010.7	10980977	13137044	18007672	0.050	1510.4	0.001	-28.3
30000	0.000434	0.000370	4320.3	5069.3	9963965	13718982	17550533	0.059	1472.1	0.001	-28.4
40000	0.000425	0.000344	4041.9	4986.7	9518548	14489153	16798289	0.056	1409.0	0.001	-28.4
50000	0.000392	0.000325	3782.4	4563.2	9652311	14048563	15562015	0.034	1305.2	0.001	-28.4
60000	0.000359	0.000288	3428.5	4281.2	9548196	14887684	14325742	0.018	1201.5	0.001	-28.3
70000	0.000325	0.000273	3272.0	3897.8	10073595	14295404	13384574	0.012	1122.6	0.001	-28.4
80000	0.000286	0.000264	3219.6	3492.5	11254709	13242537	12605439	0.007	1057.3	0.001	-28.3
90000	0.000295	0.000225	2845.8	3731.6	9646105	16585923	12148301	0.001	1019.0	0	-28.4
100000	0.000270	0.000219	2809.2	3458.9	10416966	15792998	11664961	0.004	978.4	0.001	-28.3
153080	0.000222	0.000200	2693.3	2994.8	12131753	15000073	10670013	0.005	894.9	0	-28.3

Filename : AR19460
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks
Beam width (cm) : 4.623 Beam depth (cm) : 5.060 Bulk density (KN/m^3) : 22.82 Deflection (mm) : 0.1905

Rep	Tens strn (m/m)	Comp str (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000526	0.000450	5384.7	6294.0	10237696	13987887	18614432	0.031	1803.5	0.001	-29.1
13	0.000504	0.000468	5506.8	5927.8	10934781	12670252	18312431	0.002	1774.1	0.001	-29.1
20	0.000520	0.000454	5322.5	6090.3	10235628	13401812	18219348	0.050	1765.1	0.001	-29.1
30	0.000501	0.000463	5448.3	5886.2	10883068	12702659	18149019	0.015	1758.4	0.001	-29.1
40	0.000499	0.000450	5345.6	5929.7	10710004	13177724	18033183	0.008	1747.1	0	-29.1
50	0.000490	0.000454	5375.5	5798.5	10965808	12759887	17893215	0.021	1733.5	0.001	-29.1
60	0.000495	0.000454	5345.1	5818.3	10805844	12803326	17869772	0.003	1731.3	0.001	-29.1
70	0.000492	0.000451	5322.9	5797.2	10825840	12841248	17800132	0.003	1724.6	0.001	-29.1
80	0.000502	0.000444	5235.6	5920.9	10427309	13334930	17823575	0.006	1726.8	0.001	-29.1
90	0.000478	0.000453	5410.1	5712.6	11311248	12612334	17823575	0.004	1726.8	0.001	-29.1
100	0.000490	0.000459	5379.8	5746.6	10974772	12522699	17823575	0.026	1726.8	0.001	-29.1
200	0.000492	0.000469	5423.8	5682.1	11031311	12106931	17800132	0.003	1724.6	0.001	-29.1
300	0.000493	0.000471	5410.0	5666.9	10969945	12035912	17753936	0.019	1720.0	0.001	-29.1
400	0.000486	0.000451	5347.2	5753.1	11008557	12743339	17776689	0.005	1722.3	0.001	-29.1
500	0.000492	0.000437	5225.1	5885.0	10627264	13480415	17753936	0.016	1720.0	0.001	-29.1
600	0.000483	0.000454	5380.2	5715.3	11145078	12576480	17776689	0.011	1722.3	0.001	-29.1
700	0.000469	0.000444	5379.0	5685.9	11460869	12806084	17730493	0.014	1717.8	0.001	-29.1
800	0.000478	0.000440	5311.3	5779.4	11105087	13148765	17753936	0.005	1720.0	0.001	-29.1
900	0.000490	0.000448	5313.8	5808.1	10840319	12950879	17800132	0.014	1724.6	0.001	-29.0
1000	0.000483	0.000441	5296.3	5797.2	10971324	13144628	17753936	0.010	1720.0	0.001	-29.0
2000	0.000481	0.000443	5340.5	5808.0	11096813	13124633	17847018	0.027	1729.0	0.001	-29.1
3000	0.000496	0.000426	5185.2	6037.4	10450752	14167846	17893215	0.001	1733.5	0.001	-29.0
4000	0.000471	0.000444	5434.2	5762.4	11541541	12978459	17940101	0.009	1738.1	0.001	-29.0
5000	0.000487	0.000437	5316.5	5933.4	10912027	13591424	17986297	0.005	1742.6	0.001	-29.0
6000	0.000478	0.000417	5249.9	6018.6	10976840	14426409	17986297	0.010	1742.6	0.001	-29.0
7000	0.000484	0.000441	5371.7	5897.9	11093366	13372853	18033183	0.006	1747.1	0.001	-29.0
8000	0.000480	0.000432	5322.5	5909.8	11094055	13676922	17962854	0.014	1740.3	0.001	-29.0
9000	0.000477	0.000440	5388.9	5845.6	11302284	13299766	17986297	0.006	1742.6	0.001	-29.0
10000	0.000463	0.000422	5383.3	5915.9	11617386	14029946	18079380	0.004	1751.6	0.001	-29.0
20000	0.000475	0.000438	5444.0	5906.9	11453974	13484552	18172462	0.026	1760.6	0.001	-29.1
30000	0.000487	0.000419	5173.1	6020.0	10617611	14378144	17847018	0.020	1729.0	0.001	-29.0
40000	0.000466	0.000422	5353.1	5920.5	11478796	14040978	18033183	0.027	1747.1	0.001	-29.1
50000	0.000466	0.000420	5288.9	5870.3	11340896	13971339	17847018	0.022	1729.0	0.001	-29.1
60000	0.000469	0.000425	5265.0	5819.2	11218165	13703813	17730493	0.011	1717.8	0.001	-29.1
70000	0.000469	0.000402	5126.6	5981.0	10923059	14867689	17707050	0.016	1715.5	0.001	-29.1
80000	0.000447	0.000416	5292.7	5691.1	11840784	13690712	17590524	0.006	1704.3	0.001	-29.0
90000	0.000451	0.000401	5142.7	5792.7	11391230	14452610	17474688	0.003	1693.0	0.001	-29.1
100000	0.000444	0.000402	5178.6	5715.6	11663582	14207837	17427802	0.010	1688.5	0.001	-29.1
148920	0.000413	0.000383	5132.8	5532.3	12436512	14447783	17078915	0.011	1654.6	0.001	-29.0
200000	0.000410	0.000355	4824.7	5574.8	11775281	15720600	16590060	0.009	1607.3	0.001	-29.0
250170	0.000359	0.000343	4792.4	5021.6	13345962	14653254	15729564	0.001	1523.9	0.001	-29.0
276640	0.000325	0.000298	4333.2	4723.1	13340446	15850226	14496048	0.004	1404.4	0.001	-29.0
300000	0.000231	0.000203	3302.9	3764.4	14302299	18577199	11285047	0.004	1093.3	0	-29.0
308670	0.000191	0.000188	3246.4	3297.9	17022376	17567081	10494190	0.002	1016.7	0.001	-29.0
334360	0.000168	0.000150	2802.8	3135.8	16647288	20838069	9493726	0.015	919.8	0.001	-29.0

Filename : AR20470
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks
Beam width (cm) : 4.676 Beam depth (cm) : 5.077 Bulk density (KN/m^3) : 22.73 Deflection (mm) : 0.2286

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000545	0.000642	6839.4	5807.9	12542005	9044172	16730028	0.006	1988.3	0.001	-29.1
13	0.000511	0.000590	6460.0	5595.4	12640604	9483383	15971578	0.027	1898.1	0.001	-29.1
20	0.000511	0.000599	6489.2	5536.8	12697832	9244127	15914350	0.032	1891.4	0.001	-29.1
30	0.000510	0.000581	6379.4	5594.3	12519252	9627489	15876427	0.048	1886.8	0.001	-29.1
40	0.000502	0.000581	6391.4	5522.8	12728860	9504068	15781966	0.035	1875.6	0.001	-29.1
50	0.000498	0.000580	6413.3	5506.6	12887445	9500621	15781966	0.038	1875.6	0.001	-29.1
60	0.000492	0.000571	6385.9	5502.2	12988112	9641968	15744043	0.029	1871.1	0.001	-29.1
70	0.000502	0.000572	6315.8	5542.8	12578549	9687475	15724737	0.032	1868.8	0.001	-29.1
80	0.000490	0.000571	6388.6	5487.9	13032929	9617146	15724737	0.030	1868.8	0.001	-29.1
90	0.000496	0.000553	6248.5	5608.5	12593718	10145993	15744043	0.026	1871.1	0.001	-29.1
100	0.000490	0.000577	6416.8	5455.1	13090158	9460630	15706121	0.030	1866.6	0.001	-29.0
200	0.000480	0.000571	6439.9	5414.2	13423186	9487520	15668198	0.008	1862.1	0.001	-29.1
300	0.000468	0.000575	6533.4	5314.7	13964444	9240679	15610970	0.005	1855.3	0.001	-29.0
400	0.000472	0.000577	6469.0	5298.9	13696228	9189656	15515819	0.005	1844.0	0.001	-29.1
500	0.000472	0.000575	6459.8	5305.1	13676922	9224131	15515819	0.002	1844.0	0.001	-29.0
600	0.000478	0.000560	6293.9	5373.3	13159797	9590945	15439974	0.004	1835.0	0.001	-29.1
700	0.000462	0.000597	6631.8	5126.8	14358148	8580828	15402051	0.016	1830.5	0.001	-29.0
800	0.000468	0.000589	6504.8	5170.9	13903768	8786299	15345512	0.032	1823.7	0.001	-29.0
900	0.000451	0.000575	6558.9	5148.6	14528455	8951779	15364129	0.025	1826.0	0.001	-29.0
1000	0.000441	0.000575	6637.6	5090.0	15050406	8850422	15345512	0.000	1823.7	0.001	-29.1
2000	0.000411	0.000586	6680.8	4691.8	16245999	8012680	14681524	0.011	1744.8	0.001	-29.0
3000	0.000319	0.000556	6427.2	3687.4	20157533	6634990	12481329	0.046	1483.3	0.001	-29.1
4000	0.000277	0.000544	6181.6	3150.1	22306015	5792421	11115430	0.020	1321.0	0.001	-29.0
5000	0.000265	0.000502	5749.0	3036.6	21677191	6047536	10584515	0.000	1257.9	0.001	-29.1
6000	0.000240	0.000535	6210.7	2785.3	25890725	5207173	10243212	0.022	1217.3	0.001	-29.1
7000	0.000244	0.000502	5711.1	2779.3	23372671	5535168	9958449	0.013	1183.5	0.001	-29.0
8000	0.000240	0.000477	5404.4	2719.1	22529413	5702992	9635763	0.020	1145.2	0.001	-29.1
9000	0.000235	0.000478	5333.0	2625.0	22654212	5488420	9370305	0.002	1113.6	0.001	-29.1
10000	0.000234	0.000463	5158.8	2604.3	22053658	5620252	9218615	0.021	1095.6	0.001	-29.0
10361	0.000221	0.000492	5555.0	2491.3	25190883	5066929	9161387	0.005	1088.8	0.001	-29.0
20000	0.000192	0.000414	4853.5	2252.2	25251559	5437328	8194018	0.015	973.8	0.001	-29.0
30000	0.000170	0.000401	4953.0	2099.0	29159645	5237097	7852716	0.015	933.3	0.001	-29.1
34944	0.000159	0.000402	5056.3	2003.8	31715621	4980948	7644487	0.014	908.5	0.001	-29.0

Filename : AR21465
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks
Beam width (cm) : 4.587 Beam depth (cm) : 5.039 Bulk density (KN/m^3) : 22.75 Deflection (mm) : 0.2159

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000465	0.000481	5527.6	5339.4	11890428	11094745	15433768	0.091	1661.4	0.001	-28.9
11	0.000446	0.000480	5548.9	5152.6	12455818	10739652	15182101	0.044	1634.4	0.001	-28.9
21	0.000447	0.000498	5615.0	5043.4	12562001	10134271	15098671	0.034	1625.4	0.001	-28.9
33	0.000454	0.000477	5421.9	5167.7	11931108	10838940	15035927	0.001	1618.6	0.001	-28.9
40	0.000451	0.000469	5344.0	5140.4	11837336	10952708	14889063	0.011	1602.8	0.001	-28.9
50	0.000446	0.000472	5375.1	5070.0	12065561	10734136	14826319	0.017	1596.0	0.001	-28.9
60	0.000444	0.000472	5384.4	5061.7	12126926	10716899	14826319	0.011	1596.0	0.001	-28.9
70	0.000435	0.000472	5426.1	4998.2	12471676	10582446	14784259	0.019	1591.5	0.001	-28.9
80	0.000419	0.000463	5457.8	4931.3	13035687	10642433	14721515	0.025	1584.8	0.001	-28.9
90	0.000414	0.000454	5409.7	4930.8	13060509	10849972	14658770	0.011	1578.0	0.001	-28.9
100	0.000434	0.000460	5303.5	4994.5	12231730	10848593	14616711	0.027	1573.5	0.001	-28.9
215	0.000434	0.000457	5285.8	5010.3	12191050	10953397	14616711	0.035	1573.5	0	-28.9
300	0.000419	0.000463	5403.5	4882.2	12906061	10536250	14575341	0.012	1569.0	0.001	-28.9
400	0.000413	0.000444	5331.7	4956.0	12918472	11162316	14596026	0.026	1571.3	0.001	-28.9
500	0.000431	0.000460	5299.5	4956.5	12307575	10765853	14553966	0.015	1566.8	0.001	-28.9
600	0.000423	0.000448	5268.0	4970.5	12449612	11083023	14533281	0.006	1564.5	0.001	-28.9
700	0.000428	0.000448	5239.6	4995.9	12253105	11139562	14533281	0.002	1564.5	0.001	-28.9
600	0.000447	0.000471	5221.0	4956.7	11680820	10527286	14449162	0.022	1555.5	0.001	-28.9
900	0.000437	0.000468	5298.2	4943.9	12136579	10567277	14533281	0.007	1564.5	0.001	-28.9
1000	0.000438	0.000483	5391.3	4892.1	12307575	10134271	14575341	0.001	1569.0	0.001	-28.9
2000	0.000469	0.000469	5210.7	5210.7	11102329	11102329	14805634	0.052	1593.8	0	-28.9
3000	0.000484	0.000481	5194.7	5226.8	10727241	10861004	14805634	0.050	1593.8	0.001	-28.9
4000	0.000465	0.000480	5354.1	5187.9	11517408	10813429	14973182	0.000	1611.8	0.001	-28.9
5000	0.000471	0.000477	5310.5	5244.1	11278841	10998904	14993867	0.068	1614.1	0.001	-28.9
6000	0.000493	0.000480	5205.3	5350.8	10554866	11152663	14993867	0.040	1614.1	0.001	-28.9
7000	0.000486	0.000478	5258.5	5340.5	10825840	11165763	15056612	0.019	1620.9	0.001	-28.9
8000	0.000490	0.000478	5256.5	5387.5	10723104	11264362	15119356	0.012	1627.6	0.001	-28.9
9000	0.000477	0.000486	5378.6	5279.6	11280910	10869278	15140731	0.065	1629.9	0.001	-28.9
10000	0.000508	0.000478	5193.8	5517.4	10222527	11536025	15203475	0.011	1636.6	0.001	-28.9
20000	0.000517	0.000504	5252.3	5392.1	10159093	10707246	15119356	0.101	1627.6	0.001	-29.0
30000	0.000499	0.000450	4820.9	5347.7	9658516	11884912	14407792	0.060	1551.0	0.001	-29.0
37663	0.000481	0.000448	4784.1	5133.7	9940522	11447079	14072695	0.034	1514.9	0.001	-29.0
40000	0.000457	0.000435	4752.7	4996.8	10390076	11485002	13842402	0.043	1490.1	0.001	-28.9
50000	0.000425	0.000422	4641.6	4674.4	10930644	11085781	13234953	0.043	1424.7	0.001	-29.0
60000	0.000402	0.000398	4404.9	4454.4	10949260	11196791	12585444	0.030	1354.8	0.001	-28.9
70000	0.000375	0.000359	4145.3	4334.5	11040274	12071077	12041428	0.007	1296.2	0.001	-28.9
80000	0.000352	0.000343	4023.9	4128.9	11443632	12048323	11580842	0.013	1246.6	0.001	-28.9
90000	0.000331	0.000337	4015.7	3944.7	12140716	11714605	11308490	0.010	1217.3	0.001	-28.9
100000	0.000311	0.000326	3954.4	3773.8	12698522	11565673	10973393	0.006	1181.3	0.001	-28.9
157710	0.000253	0.000279	3660.4	3327.6	14451231	11942830	9905357	0.004	1066.3	0.001	-28.8
200000	0.000225	0.000244	3436.3	3163.9	15273804	12948121	9360652	0.006	1007.7	0.001	-28.9
233860	0.000207	0.000207	3183.9	3183.9	15373782	15373782	9046930	0.004	973.8	0	-28.8
249720	0.000198	0.000192	3092.5	3188.4	15605454	16588681	8920751	0.013	960.4	0	-28.8
265720	0.000176	0.000228	3571.5	2754.5	20314049	12082798	8837322	0.006	951.3	0.001	-28.8

Filename : AR22468
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks
Beam width (cm) : 4.651 Beam depth (cm) : 5.093 Bulk density (KN/m^3) : 22.79 Deflection (mm) : 0.2286

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000900	0.000672	4780.5	6402.3	5312046	9527511	14535350	1.682	1733.5	0.007	-28.8
13	0.000891	0.000617	4053.4	5855.0	4549390	9491657	12720586	0.477	1517.1	0.002	-28.8
20	0.000875	0.000618	3961.0	5602.7	4528912	9060720	12323434	0.434	1469.8	0.002	-28.8
30	0.000879	0.000617	3900.3	5558.4	4436864	9011076	12172433	0.400	1451.8	0.002	-28.8
40	0.000863	0.000602	3824.8	5481.6	4433623	9106227	11964204	0.384	1427.0	0.002	-28.8
50	0.000854	0.000602	3780.6	5362.1	4428245	8907651	11775281	0.354	1404.4	0.002	-28.8
60	0.000852	0.000594	3709.6	5318.0	4352676	8945573	11605664	0.337	1384.1	0.002	-28.8
70	0.000857	0.000581	3643.5	5371.8	4252836	9244816	11529819	0.324	1375.1	0.002	-28.8
80	0.000851	0.000581	3617.9	5296.9	4252491	9115880	11416052	0.327	1361.6	0.002	-28.8
90	0.000840	0.000577	3600.7	5247.5	4284829	9100711	11340896	0.303	1352.6	0.002	-28.8
100	0.000828	0.000577	3597.6	5168.6	4342747	8963500	11265051	0.321	1343.6	0.002	-28.8
200	0.000819	0.000542	3400.8	5138.6	4149963	9475109	10867899	0.256	1296.2	0.002	-28.8
300	0.000794	0.000545	3349.7	4878.0	4217878	8944884	10546592	0.238	1257.9	0.002	-28.8
400	0.000782	0.000548	3335.6	4758.7	4264213	8678737	10414898	0.183	1242.1	0.002	-28.8
500	0.000776	0.000535	3264.2	4737.1	4204985	8855938	10263208	0.187	1224.1	0.001	-28.8
600	0.000763	0.000529	3236.4	4667.6	4242425	8824911	10150130	0.211	1210.6	0.001	-28.9
700	0.000764	0.000520	3175.5	4667.8	4154582	8976601	10036362	0.185	1197.1	0.001	-28.8
800	0.000772	0.000511	3099.8	4681.4	4016338	9160008	9903978	0.185	1181.3	0.001	-28.8
900	0.000757	0.000516	3111.2	4567.9	4110454	8860765	9828823	0.165	1172.2	0.001	-28.8
1000	0.000757	0.000523	3123.4	4520.5	4126589	8643572	9809517	0.182	1170.0	0.001	-28.8
2000	0.000735	0.000496	2939.8	4352.3	4002134	8771819	9318593	0.148	1111.4	0.001	-28.8
3000	0.000723	0.000487	2848.2	4224.4	3941458	8670463	9034519	0.141	1077.6	0.001	-28.8
4000	0.000717	0.000468	2735.3	4190.1	3816727	8955916	8789057	0.125	1048.2	0.001	-28.8
5000	0.000696	0.000478	2750.5	4001.4	3952904	8366393	8656673	0.124	1032.5	0.001	-28.8
6000	0.000690	0.000466	2684.3	3970.6	3891055	8513946	8505672	0.124	1014.4	0.001	-28.8
7000	0.000669	0.000460	2637.7	3832.7	3942768	8325023	8297443	0.093	989.6	0.001	-28.8
8000	0.000662	0.000460	2607.5	3746.7	3941596	8138169	8165059	0.113	973.8	0.001	-28.8
9000	0.000648	0.000457	2592.2	3673.0	3999514	8029917	8070598	0.088	962.6	0.001	-28.8
10000	0.000659	0.000422	2440.2	3811.2	3705304	9038656	7900981	0.106	942.3	0.001	-28.8
20000	0.000548	0.000395	2246.7	3120.0	4097630	7901670	6937060	0.069	827.3	0.001	-28.8
30000	0.000499	0.000341	2049.3	2997.8	4105559	8786299	6464200	0.036	771.0	0.001	-28.8
40000	0.000450	0.000338	1994.9	2654.1	4433554	7847200	6048432	0.034	721.4	0.001	-28.8

Filename : AR26465

Material : Asphalt Rubber Concrete , Danby Str., Fairbanks

Beam width (cm) : 4.572 Beam depth (cm) : 5.118 Bulk density (KN/m^3) : 23.00 Deflection (mm) : 0.2057

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000423	0.000431	5612.0	5515.0	13262533	12807463	16332187	0.079	1749.3	0.001	-29.1
13	0.000419	0.000420	5479.7	5460.2	13088089	12995007	16058455	0.026	1720.0	0	-29.1
20	0.000411	0.000402	5360.8	5479.9	13036377	13621762	15910902	0.030	1704.3	0	-29.1
30	0.000407	0.000405	5388.3	5408.2	13246674	13344583	15848158	0.032	1697.5	0	-29.1
40	0.000441	0.000432	5279.6	5388.9	11971099	12471676	15658545	0.033	1677.2	0	-29.1
50	0.000446	0.000440	5340.7	5413.2	11988337	12315849	15784724	0.035	1690.7	0	-29.1
60	0.000447	0.000448	5392.9	5374.9	12064871	11984889	15806098	0.035	1693.0	0	-29.1
70	0.000431	0.000443	5458.4	5311.4	12676458	12002816	15806098	0.031	1693.0	0	-29.1
80	0.000429	0.000441	5458.6	5311.1	12721275	12042807	15806098	0.031	1693.0	0	-29.1
90	0.000435	0.000441	5428.0	5354.7	12476503	12141406	15826783	0.042	1695.2	0	-29.1
100	0.000429	0.000454	5550.1	5240.8	12934331	11532577	15826783	0.039	1695.2	0	-29.1
200	0.000446	0.000441	5392.5	5447.2	12104862	12351014	15910902	0.028	1704.3	0	-29.1
300	0.000440	0.000453	5517.0	5353.6	12551658	11819409	15953651	0.051	1708.8	0	-29.1
400	0.000444	0.000460	5527.0	5330.3	12448233	11577395	15932277	0.036	1706.5	0	-29.1
500	0.000459	0.000444	5338.8	5517.9	11633934	12427548	15932277	0.041	1706.5	0	-29.0
600	0.000454	0.000441	5368.0	5531.2	11812514	12542005	15995711	0.047	1713.3	0	-29.1
700	0.000451	0.000448	5416.2	5452.2	11997300	12157264	15953651	0.037	1708.8	0	-29.1
800	0.000453	0.000440	5346.6	5509.7	11804240	12535110	15932277	0.050	1706.5	0	-29.1
900	0.000444	0.000448	5439.8	5385.6	12251726	12008332	15890217	0.045	1702.0	0	-29.1
1000	0.000456	0.000443	5325.9	5487.3	11681509	12399968	15868843	0.050	1699.8	0	-29.1
2000	0.000450	0.000431	5141.7	5373.0	11427084	12477882	15426873	0.041	1652.4	0	-29.1
3000	0.000426	0.000423	5093.6	5129.5	11953172	12122100	15006278	0.047	1607.3	0	-29.0
4000	0.000425	0.000413	4940.8	5083.5	11635313	12317228	14711862	0.034	1575.7	0	-29.1
5000	0.000413	0.000426	5012.4	4854.6	12144853	11392609	14480190	0.018	1551.0	0	-29.0
6000	0.000419	0.000407	4805.5	4946.3	11478107	12160022	14311952	0.037	1532.9	0	-29.0
7000	0.000419	0.000396	4695.9	4960.7	11216097	12516494	14164399	0.035	1517.1	0	-29.1
8000	0.000405	0.000392	4695.6	4856.2	11586358	12393073	14016846	0.043	1501.4	0	-29.0
9000	0.000402	0.000392	4663.1	4787.2	11591185	12216561	13869982	0.031	1485.6	0	-29.0
10000	0.000398	0.000374	4548.0	4837.9	11432600	12936399	13764489	0.034	1474.3	0	-29.1
20000	0.000353	0.000340	4072.0	4232.8	11531198	12459955	12186223	0.038	1305.2	0	-29.2
30000	0.000258	0.000252	3273.7	3351.2	12700590	13308729	9723329	0.025	1041.5	0	-29.1
40000	0.000216	0.000223	2989.9	2890.3	13839644	12932262	8629093	0.031	924.3	0	-29.1
50000	0.000198	0.000194	2679.3	2741.1	13520406	14151988	7955451	0.024	852.1	0	-29.1
60000	0.000185	0.000179	2567.4	2653.0	13896183	14838040	7661035	0.018	820.6	0	-29.1
61549	0.000183	0.000186	2609.0	2567.3	14236107	13784484	7597601	0.020	813.8	0	-29.2

Filename : AR30467
Material : Asphalt Rubber Concrete , Danby Str., Fairbanks
Beam width (cm) : 4.653 Beam depth (cm) : 5.207 Bulk density (KN/m^3) : 22.71 Deflection (mm) : 0.2261

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000440	0.000508	5846.7	5058.0	13301834	9955001	14244381	0.087	1796.7	0.001	-29.1
13	0.000396	0.000474	5573.0	4661.6	14061663	9838476	13332862	0.052	1681.7	0	-29.1
20	0.000372	0.000478	5766.6	4491.1	15481344	9390301	13261154	0.062	1672.7	0	-29.1
30	0.000375	0.000483	5732.0	4458.2	15266220	9235163	13172208	0.043	1661.4	0.001	-29.1
40	0.000368	0.000480	5714.2	4383.3	15526851	9136565	13028792	0.043	1643.4	0.001	-29.1
50	0.000359	0.000472	5727.5	4354.3	15950893	9219305	12993628	0.034	1638.9	0.001	-29.1
60	0.000355	0.000478	5786.1	4290.0	16317018	8969706	12939847	0.035	1632.1	0.001	-29.1
70	0.000361	0.000480	5733.5	4309.0	15901249	8981427	12921920	0.049	1629.9	0	-29.1
80	0.000340	0.000472	5839.9	4200.3	17190614	8893171	12832285	0.050	1618.6	0	-29.1
90	0.000350	0.000477	5753.8	4225.5	16432854	8862144	12797120	0.053	1614.1	0	-29.1
100	0.000349	0.000466	5679.1	4245.8	16288748	9104158	12761266	0.055	1609.6	0	-29.1
200	0.000347	0.000468	5671.6	4208.6	16337013	8995217	12689558	0.060	1600.6	0	-29.1
300	0.000334	0.000475	5815.1	4083.3	17423665	8591170	12599923	0.050	1589.3	0	-29.0
400	0.000322	0.000478	5921.5	3984.6	18399308	8331229	12510978	0.077	1578.0	0	-29.1
500	0.000314	0.000481	5950.5	3887.1	18927465	8076803	12349635	0.078	1557.7	0	-29.1
600	0.000311	0.000469	5869.3	3894.2	18848172	8297443	12296543	0.067	1551.0	0	-29.1
700	0.000319	0.000475	5796.8	3888.7	18180047	8181607	12224835	0.069	1541.9	0	-29.1
800	0.000305	0.000472	5900.4	3815.7	19317722	8078872	12171054	0.092	1535.2	0	-29.1
900	0.000305	0.000486	5993.3	3768.8	19621791	7758944	12153127	0.083	1532.9	0	-29.1
1000	0.000299	0.000477	5971.0	3750.5	19937582	7866506	12100036	0.067	1526.2	0	-29.1
2000	0.000280	0.000474	6007.8	3551.8	21447587	7496244	11724258	0.066	1478.8	0	-29.1
3000	0.000261	0.000480	6194.3	3366.5	23756033	7017042	11456043	0.068	1445.0	0	-29.0
4000	0.000250	0.000463	6102.3	3296.4	24378652	7113572	11241608	0.082	1417.9	0	-29.1
5000	0.000229	0.000465	6352.8	3135.7	27686873	6745310	11027174	0.055	1390.9	0	-29.1
6000	0.000226	0.000462	6267.3	3073.0	27673772	6653261	10830666	0.065	1366.1	0	-29.1
7000	0.000206	0.000468	6631.2	2914.4	32250673	6229288	10634159	0.053	1341.3	0	-29.1
8000	0.000213	0.000443	6145.7	2959.1	28844543	6686840	10491432	0.052	1323.3	0	-29.2
9000	0.000194	0.000443	6471.1	2832.5	33409033	6400835	10348016	0.054	1305.2	0	-29.1
10000	0.000189	0.000446	6551.4	2782.7	34622553	6246249	10259071	0.045	1294.0	0	-29.1
20000	0.000152	0.000405	6649.9	2493.7	43756360	6153236	9526132	0.031	1201.5	0	-29.1
30000	0.000124	0.000405	7363.9	2247.1	59547289	5544752	9043482	0.038	1140.7	0	-29.1
40000	0.000107	0.000381	7548.6	2123.1	70370370	5566265	8704248	0.035	1097.9	0	-29.1
50000	0.000089	0.000367	8260.2	2014.7	92399895	5496694	8507051	0.031	1073.0	0	-29.1
54500	0.000094	0.000361	7742.4	2015.5	82484885	5589983	8400179	0.032	1059.5	0	-29.1

Filename : P12390
Material : PlusRide , A-Str., Anchorage
Beam width (cm) : 5.166 Beam depth (cm) : 4.943

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)
1	0.001153	0.001293	702.7	626.7	609380
13	0.001195	0.001350	678.0	600.1	567355
20	0.001168	0.001307	713.4	637.7	610676
30	0.001171	0.001316	726.5	646.7	620364
40	0.001161	0.001317	675.2	595.0	581752
50	0.001128	0.001307	747.3	645.1	662589
60	0.001170	0.001347	747.8	649.4	639408
70	0.001152	0.001319	700.3	611.7	608042
80	0.001140	0.001319	626.5	541.5	549614
90	0.001131	0.001296	690.5	602.4	610614
100	0.001164	0.001320	760.8	670.6	653784
200	0.001128	0.001311	666.3	573.2	590777
300	0.001164	0.001329	792.6	694.1	681178
400	0.001147	0.001313	767.1	670.5	668684
500	0.001158	0.001310	748.0	661.2	646151
600	0.001123	0.001301	706.0	609.8	628431
700	0.001168	0.001319	721.1	638.8	617337
800	0.001135	0.001269	537.4	480.6	473335
900	0.001158	0.001292	607.3	544.3	524613
1000	0.001141	0.001281	548.7	488.7	480747
2000	0.001176	0.001329	611.6	540.9	520228
3000	0.001147	0.001320	506.2	439.9	441190
4000	0.001131	0.001307	479.4	414.9	423953
5000	0.001144	0.001331	492.8	423.8	430682
7666	0.001125	0.001340	461.9	388.0	410652
8000	0.001104	0.001314	402.3	338.0	364346
9000	0.001091	0.001298	382.8	321.7	351004
10000	0.001147	0.001360	472.8	398.7	412093
34363	0.001171	0.001362	740.0	636.4	631885

Bulk density (KN/m^3) : 22.94 Deflection (mm) : 0.6782

Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
484539	610987	0.904	219.6	0.015	21.9
444576	587151	0.862	211.0	0.014	21.9
488028	621026	0.828	223.2	0.014	21.9
491551	631065	0.830	226.8	0.014	21.9
451760	583386	0.820	209.6	0.014	21.9
493675	638587	0.782	229.5	0.014	21.9
482147	641097	0.820	230.4	0.014	21.9
463882	602209	0.804	216.4	0.014	21.9
410673	535714	0.812	192.5	0.014	21.9
464744	593425	0.781	213.3	0.014	21.9
508003	657411	0.786	236.3	0.014	22.0
437171	568334	0.784	204.2	0.014	22.0
522193	682502	0.769	245.3	0.014	22.0
510795	659920	0.755	237.2	0.014	22.1
504893	647372	0.751	232.6	0.013	22.1
468784	603464	0.754	216.9	0.013	22.1
484470	624790	0.779	224.5	0.014	22.1
378618	467964	0.787	168.2	0.014	22.2
421353	529439	0.806	190.3	0.014	22.2
381397	476748	0.810	171.3	0.014	22.2
407026	529439	0.773	190.3	0.013	22.1
333222	434089	0.788	156.0	0.013	21.9
317542	410253	0.818	147.4	0.013	21.8
318549	420292	0.811	151.0	0.013	21.8
289631	388926	0.786	139.8	0.013	21.9
257163	338744	0.772	121.7	0.014	21.9
247910	322431	0.763	115.9	0.013	22.0
293113	398958	0.772	143.4	0.013	22.0
467295	631065	0.736	226.8	0.011	21.9

Filename : P13370
Material : PlusRide , A-Str., Anchorage
Beam width (cm) : 5.042 Beam depth (cm) : 4.963 Bulk density (KN/m^3) : 22.96 Deflection (mm) : 0.5334

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000867	0.001208	435.2	312.3	501832	258438	424615	0.584	118.6	0.019	22.3
13	0.000815	0.001156	294.3	207.4	361070	179408	284157	0.494	79.4	0.016	22.3
20	0.000851	0.001194	441.8	315.0	519345	263913	429462	0.487	119.9	0.015	22.3
30	0.000857	0.001204	520.4	370.4	607470	307634	505341	0.477	141.1	0.015	22.3
40	0.000854	0.001173	418.4	304.6	490076	259790	411700	0.483	115.0	0.015	22.3
50	0.000857	0.001165	448.7	329.9	523689	283136	443990	0.483	124.0	0.015	22.3
60	0.000857	0.001202	526.7	375.3	614793	312116	511802	0.483	142.9	0.015	22.3
70	0.000840	0.001165	386.1	278.4	459407	238967	377798	0.482	105.5	0.015	22.3
80	0.000839	0.001171	357.8	256.3	426525	218834	348735	0.482	97.4	0.015	22.3
90	0.000855	0.001174	465.9	339.3	544712	289025	458524	0.482	128.0	0.015	22.3
100	0.000870	0.001185	484.8	356.1	557171	300663	479513	0.481	133.9	0.014	22.2
200	0.000860	0.001213	556.6	394.6	647468	325327	539244	0.486	150.6	0.014	22.2
300	0.000864	0.001186	523.2	381.2	605409	321424	515029	0.480	143.8	0.014	22.2
400	0.000855	0.001149	406.6	302.7	475410	263499	405240	0.479	113.2	0.014	22.2
500	0.000863	0.001196	491.7	354.5	569982	296340	481126	0.482	134.4	0.014	22.1
600	0.000872	0.001171	490.9	365.4	563197	311985	489200	0.486	136.6	0.014	22.1
700	0.000870	0.001202	558.2	403.9	641497	335952	547318	0.483	152.8	0.014	22.1
800	0.000806	0.001131	304.0	216.7	377136	191605	295458	0.491	82.5	0.014	22.1
900	0.000857	0.001177	462.8	336.8	540182	286170	455291	0.498	127.1	0.014	22.1
1000	0.000869	0.001189	533.8	390.0	614565	328023	526330	0.503	147.0	0.014	22.1
2000	0.000857	0.001179	482.8	351.0	563584	297809	474666	0.498	132.6	0.014	22.0
3000	0.000831	0.001168	409.0	291.1	491944	249199	397173	0.486	110.9	0.014	21.9
4000	0.000818	0.001149	357.4	254.5	436881	221516	347122	0.471	96.9	0.014	21.9
5000	0.000837	0.001171	404.6	289.3	483174	247020	393939	0.472	110.0	0.014	21.8
6000	0.000790	0.001110	244.5	173.9	309579	156682	237333	0.489	66.3	0.015	21.8
7000	0.000837	0.001176	405.5	288.8	484250	245690	393939	0.500	110.0	0.015	21.8
8000	0.000815	0.001146	360.9	256.7	442831	224060	350349	0.506	97.8	0.015	21.8
9000	0.000840	0.001162	410.2	296.6	488132	255212	402013	0.503	112.3	0.015	21.8
10000	0.000761	0.001085	172.6	121.2	226756	111720	166294	0.522	46.4	0.015	21.8
15021	0.000790	0.001129	433.4	303.1	548883	268347	416548	0.499	116.3	0.014	21.8
20000	0.000809	0.001123	366.6	264.0	453091	234988	358423	0.462	100.1	0.014	21.9

Filename : P18380
Material : PlusRide , A-Str., Anchorage
Beam width (cm) : 5.108   Beam depth (cm) : 5.118   Bulk density (KN/m³) : 22.76   Deflection (mm) : 0.5974

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m³)	Max load (N)	Lag (sec)	Temp (C)
1	0.001368	0.000963	836.3	1188.4	611442	1234757	992604	1.572	344.9	0.017	22.0
10	0.001386	0.000954	669.5	972.8	483133	1020184	801889	1.423	278.6	0.016	22.0
20	0.001393	0.000954	659.3	963.3	473293	1010186	791477	1.419	275.0	0.016	22.0
30	0.001380	0.000954	620.7	898.1	449892	941857	742178	1.405	257.9	0.016	22.0
40	0.001368	0.000924	484.8	717.9	354479	777135	585192	1.405	203.3	0.016	22.0
50	0.001386	0.000942	559.3	823.1	403668	874079	673421	1.406	234.0	0.016	22.0
60	0.001371	0.000940	479.2	698.7	349611	743212	574809	1.406	199.7	0.016	22.0
70	0.001396	0.000945	569.1	841.1	407660	890420	686397	1.406	238.5	0.016	22.0
80	0.001372	0.000921	455.7	679.1	332084	737558	551455	1.401	191.6	0.016	22.0
90	0.001404	0.000945	607.6	902.8	432923	955716	734386	1.404	255.2	0.016	22.0
100	0.001383	0.000946	495.0	723.4	357988	764587	594273	1.405	206.5	0.016	22.0
200	0.001427	0.000968	605.3	892.1	424063	921172	729215	1.413	253.4	0.016	22.0
300	0.001435	0.000971	562.8	831.3	392250	855670	678613	1.415	235.8	0.016	22.0
400	0.001420	0.000924	386.6	594.2	272256	643248	473604	1.413	164.6	0.016	22.0
500	0.001430	0.000922	388.4	602.4	271539	653115	477493	1.415	165.9	0.016	22.0
600	0.001448	0.000958	505.4	764.0	348949	797407	615034	1.409	213.7	0.016	22.0
700	0.001442	0.000954	457.3	691.6	317053	725285	556647	1.407	193.4	0.016	22.0
800	0.001478	0.000991	576.6	860.2	390140	868149	698050	1.405	242.6	0.015	22.0
900	0.001462	0.000960	442.2	673.6	302518	701980	539775	1.406	187.6	0.015	22.0
1000	0.001436	0.000945	419.1	637.2	291783	674586	511230	1.409	177.6	0.015	22.0
2000	0.001460	0.000945	449.1	694.3	307600	734938	551455	1.409	191.6	0.015	22.0
3000	0.001489	0.000967	477.4	734.9	320735	759967	585192	1.401	203.3	0.015	22.0
4000	0.001527	0.000998	545.4	834.4	357133	835812	666933	1.392	231.7	0.015	22.0
5004	0.001521	0.000979	453.5	704.7	298092	719907	557943	1.379	193.9	0.015	21.9
6000	0.001547	0.000998	482.5	747.6	311999	748866	592977	1.374	206.0	0.015	22.0
7000	0.001557	0.000995	452.3	707.6	290493	710943	557943	1.364	193.9	0.015	22.0
8000	0.001515	0.000989	352.1	539.3	232382	545146	430786	1.347	149.7	0.015	21.9
9000	0.001556	0.001037	436.3	654.5	280509	631148	529398	1.340	183.9	0.015	21.9
10000	0.001590	0.001043	499.4	761.3	314157	729905	609842	1.341	211.9	0.015	21.9
20000	0.001639	0.001071	423.4	647.7	258321	604629	517718	1.305	179.9	0.015	22.0
30000	0.001636	0.001070	349.2	534.0	213428	499122	426890	1.286	148.3	0.015	21.9
40000	0.001538	0.001046	321.3	472.3	208953	451581	386665	1.184	134.4	0.015	21.9
50000	0.001567	0.001061	308.8	456.3	197011	430096	372392	1.182	129.4	0.015	21.9
70000	0.001560	0.001068	321.1	468.9	205830	438894	385368	1.130	133.9	0.015	21.9
80000	0.001581	0.001059	336.5	502.2	212862	474017	407426	1.112	141.6	0.014	21.9
90000	0.001587	0.001074	300.2	443.5	189206	412817	362015	1.096	125.8	0.014	21.9
100000	0.001573	0.001043	280.6	423.3	178360	405909	341254	1.071	118.6	0.014	21.9
151380	0.001624	0.001021	241.4	384.1	148629	376329	299733	1.052	104.1	0.014	21.9
178990	0.001673	0.001042	243.6	391.4	145595	375798	303621	1.033	105.5	0.014	21.9
200000	0.001630	0.001016	169.8	272.4	104170	268043	211497	1.029	73.5	0.014	21.9
259930	0.001827	0.001050	285.0	495.6	156027	471839	365904	1.023	127.1	0.014	21.9
300000	0.001843	0.001034	231.4	412.4	125544	398855	299733	0.998	104.1	0.013	21.9
330340	0.001864	0.001058	248.4	437.8	133294	413810	320493	0.960	111.4	0.014	21.9
349300	0.001325	0.000758	214.9	375.4	162267	494985	276379	0.538	96.0	0.013	21.9

Filename : P19395
Material : PlusRide , A-Str., Anchorage
Beam width (cm) : 4.915 Beam depth (cm) : 5.034 Bulk density (KN/m^3) : 22.96 Deflection (mm) : 0.7239

Rep	Tens strn (m/m)	Comp str (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.001567	0.001459	545.6	586.3	348080	401923	479451	1.785	184.9	0.019	21.9
11	0.001453	0.001414	281.6	289.3	193812	204582	242063	1.682	93.3	0.019	21.9
23	0.001478	0.001466	416.0	419.4	281461	286060	354327	1.658	136.6	0.019	21.9
30	0.001432	0.001421	280.2	282.3	195687	198569	238553	1.665	92.0	0.019	21.9
40	0.001491	0.001450	377.9	388.7	253364	268153	325092	1.655	125.3	0.019	21.9
50	0.001475	0.001447	320.9	327.1	217517	226115	274807	1.645	106.0	0.019	21.9
60	0.001448	0.001427	268.2	272.2	185227	190674	229197	1.639	88.4	0.019	21.9
70	0.001472	0.001448	313.1	318.3	212711	219771	267788	1.642	103.2	0.019	21.9
80	0.001497	0.001463	370.7	379.4	247544	259273	318073	1.667	122.6	0.019	21.9
90	0.001486	0.001429	309.7	321.9	208463	225315	267788	1.655	103.2	0.019	21.9
100	0.001474	0.001438	306.4	314.0	207939	218406	263113	1.667	101.4	0.019	21.9
200	0.001508	0.001475	372.3	380.5	246875	257970	319245	1.632	123.1	0.018	21.9
300	0.001512	0.001468	333.9	344.5	220819	234947	287666	1.633	110.9	0.018	21.9
400	0.001548	0.001497	443.4	458.4	286425	306130	382390	1.631	147.4	0.018	21.9
500	0.001506	0.001459	317.5	327.9	210759	224763	273635	1.629	105.5	0.016	21.9
600	0.001576	0.001526	552.0	570.4	350204	373847	475941	1.601	183.5	0.017	21.9
700	0.001529	0.001474	376.3	390.4	246172	264940	325092	1.591	125.3	0.017	21.9
800	0.001575	0.001515	542.3	563.7	344364	371985	468922	1.578	180.8	0.017	21.9
900	0.001572	0.001524	559.3	576.8	355837	378446	481788	1.575	185.8	0.017	21.9
1000	0.001570	0.001530	528.0	541.9	336235	354141	453725	1.567	174.9	0.017	21.9
2000	0.001593	0.001541	493.6	510.3	309889	331222	425656	1.546	164.1	0.017	21.9
3000	0.001489	0.001420	191.2	200.5	128488	141189	166052	1.549	64.0	0.017	21.9
4000	0.001615	0.001544	400.4	418.9	247882	271387	347308	1.531	133.9	0.017	21.9
5000	0.001648	0.001581	519.9	542.0	315522	342854	450216	1.501	173.6	0.016	21.9
6000	0.001609	0.001529	337.4	355.1	209656	232299	293513	1.499	113.2	0.016	21.9
7271	0.001617	0.001520	349.0	371.3	215896	244290	305207	1.492	117.7	0.016	21.9
8000	0.001661	0.001557	405.9	433.1	244338	278172	355492	1.487	137.1	0.016	21.9
9000	0.001640	0.001572	376.6	393.0	229562	250013	326258	1.488	125.8	0.016	21.9
10000	0.001667	0.001576	453.2	479.4	271849	304104	395256	1.476	152.4	0.016	21.9
54747	0.001937	0.001794	479.3	517.5	247441	288473	422146	1.510	162.8	0.015	22.0
60000	0.001840	0.007590	1395.3	338.3	758243	44569	461910	1.350	178.1	0.012	22.0
70000	0.001855	0.007652	1402.5	340.0	756037	44427	464247	1.298	179.0	0.011	22.0
80000	0.001724	0.001636	220.3	232.2	127806	141906	191778	1.276	73.9	0.015	21.9
90000	0.001733	0.001639	272.3	287.9	157123	175636	237388	1.282	91.5	0.015	21.9
100000	0.001751	0.001696	359.6	371.3	205381	218951	309889	1.189	119.5	0.015	21.9
150500	0.001673	0.001553	252.5	272.1	150890	175264	222184	1.102	85.7	0.015	22.0
175380	0.001639	0.001539	283.4	301.7	172885	196039	247910	1.013	95.6	0.015	21.9
200000	0.001582	0.001436	266.9	294.1	168693	204740	237388	0.936	91.5	0.015	21.9
221420	0.001489	0.001343	237.3	263.1	159412	195977	211656	0.838	81.6	0.015	21.9
236740	0.001378	0.001249	147.1	162.4	106755	130074	130971	0.757	50.5	0.015	21.9
259930	0.001299	0.001177	206.3	227.7	158750	193419	183593	0.636	70.8	0.014	21.9

Filename : P203100
Material : PlusRide , A-Str., Anchorage
Beam width (cm) : 5.050 Beam depth (cm) : 5.009 Bulk density (KN/m³) : 22.80 Deflection (mm) : 0.7620

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m³)	Max load (N)	Lag (sec)	Temp (C)
1	0.001317	0.001474	705.0	630.2	535286	427662	539037	1.647	221.4	0.018	22.2
13	0.001372	0.001481	711.6	659.4	518580	445203	554406	1.656	227.7	0.018	22.2
20	0.001348	0.001475	588.9	538.4	436750	364973	455601	1.648	187.1	0.018	22.2
30	0.001368	0.001453	584.2	550.0	427083	378611	458897	1.643	188.5	0.019	22.2
40	0.001392	0.001521	795.8	728.0	571858	478554	615882	1.636	252.9	0.019	22.2
50	0.001383	0.001514	746.7	682.1	540085	450574	577463	1.630	237.2	0.019	22.2
60	0.001396	0.001511	764.9	706.7	547835	467791	595025	1.628	244.4	0.019	22.2
70	0.001350	0.001468	544.6	500.9	403433	341316	422664	1.619	173.6	0.019	22.2
80	0.001393	0.001493	617.8	576.4	443438	386120	483050	1.620	198.4	0.019	22.2
90	0.001383	0.001499	652.5	601.9	471928	401585	507196	1.615	208.3	0.019	22.2
100	0.001334	0.001457	480.8	440.0	360553	301953	372165	1.612	152.6	0.019	22.2
200	0.001299	0.001404	349.6	323.7	269112	230603	272263	1.603	111.8	0.019	22.1
300	0.001311	0.001439	409.4	373.0	312275	259149	316177	1.580	129.8	0.019	22.1
400	0.001417	0.001532	651.6	602.8	459834	393525	507196	1.573	208.3	0.018	22.1
500	0.001390	0.001526	555.8	506.4	399834	331925	429255	1.568	176.3	0.018	22.1
600	0.001448	0.001591	803.6	731.4	554910	459634	620274	1.559	254.7	0.018	22.1
700	0.001460	0.001582	804.9	742.8	551255	469412	625763	1.568	257.0	0.018	22.1
800	0.001390	0.001500	501.7	464.8	360877	309792	390829	1.509	160.5	0.018	22.1
900	0.001438	0.001565	697.6	641.2	485222	409846	541230	1.510	222.3	0.018	22.1
1000	0.001421	0.001539	575.9	531.9	405171	345564	447913	1.503	183.9	0.018	22.1
1060	0.001439	0.001585	754.8	685.3	524434	432275	581855	1.496	239.0	0.018	22.1
2000	0.001381	0.001524	510.4	462.5	369517	303414	393022	1.425	161.4	0.018	22.0
2584	0.001404	0.001490	458.3	431.7	326506	289735	360091	1.418	147.9	0.018	22.0
3000	0.001371	0.001499	414.3	378.9	302229	252764	320569	1.398	131.7	0.018	22.0
4000	0.001335	0.001444	296.2	273.9	221902	189723	230548	1.376	94.7	0.018	22.0
5000	0.001316	0.001404	200.3	187.8	152248	133777	156992	1.357	64.5	0.018	22.0
6000	0.001392	0.001487	337.8	316.2	242773	212635	264575	1.342	108.7	0.018	21.9
7000	0.001423	0.001545	467.9	430.9	328843	278889	363380	1.310	149.2	0.018	22.0
7629	0.001354	0.001429	222.8	211.2	164528	147822	175650	1.300	72.1	0.018	22.0
8000	0.001390	0.001489	346.6	323.7	249351	217496	271167	1.306	111.4	0.018	22.0
9000	0.001386	0.001477	341.6	320.5	246503	217089	267871	1.294	110.0	0.018	21.9
10000	0.001423	0.001490	401.0	382.9	281778	256990	317273	1.275	130.3	0.017	22.0
15098	0.001418	0.001500	327.7	309.8	231051	206498	257990	1.225	106.0	0.017	21.9
20000	0.001450	0.001483	263.2	257.4	181538	173602	210787	1.209	86.6	0.017	22.0
24059	0.001478	0.001505	265.3	260.6	179518	173182	212980	1.187	87.5	0.017	21.9
30000	0.001518	0.001573	354.7	342.2	233603	217517	282143	1.153	115.9	0.017	22.0
38587	0.001441	0.001471	180.8	177.1	125461	120428	144912	1.100	59.5	0.017	21.9
40000	0.001414	0.001462	179.2	173.3	126716	118587	142720	1.074	58.6	0.016	22.0
68184	0.001378	0.001423	161.2	156.1	116932	109699	128447	0.902	52.8	0.017	22.0
70000	0.001395	0.001432	201.9	196.7	144781	137342	161384	0.912	66.3	0.017	21.9
80000	0.001414	0.001477	277.1	265.3	195963	179704	219564	0.837	90.2	0.017	22.0
85134	0.001424	0.001480	276.3	266.0	193998	179815	219564	0.812	90.2	0.017	22.0
90000	0.001298	0.001334	134.7	131.1	103763	98274	107590	0.786	44.2	0.017	22.0
93139	0.001381	0.001439	232.5	223.1	168335	155020	184434	0.779	75.7	0.017	22.0

Filename : P21395
Material : PlusRide , A-Str., Anchorage
Beam width (cm) : 5.032 Beam depth (cm) : 4.884 Bulk density (KN/m^3) : 22.91 Deflection (mm) : 0.7163

Rep	Tens stm (m/m)	Comp stm (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.001341	0.001396	1394.2	1339.1	1039628	959163	1207039	1.883	430.6	0.015	21.9
13	0.001372	0.001393	1298.6	1279.2	946339	918207	1138778	1.773	406.2	0.015	21.9
20	0.001344	0.001347	850.6	848.7	632927	630127	750797	1.766	267.8	0.015	21.9
30	0.001354	0.001357	923.7	921.6	681971	678978	815265	1.764	290.8	0.016	21.9
40	0.001395	0.001357	979.4	1006.3	702325	741419	877182	1.774	312.9	0.016	21.9
50	0.001384	0.001344	780.9	804.3	564190	598472	700187	1.779	249.8	0.016	21.9
60	0.001413	0.001386	976.2	995.1	691155	718114	870839	1.783	310.6	0.016	21.9
70	0.001387	0.001332	709.4	738.8	511416	554627	639553	1.794	228.1	0.016	21.9
80	0.001365	0.001320	643.0	664.8	471128	503576	577615	1.794	206.0	0.016	21.9
90	0.001413	0.001357	736.3	766.2	521296	564501	663561	1.797	236.7	0.016	21.9
100	0.001436	0.001362	777.5	820.0	541299	602140	705290	1.799	251.6	0.016	21.9
200	0.001503	0.001398	841.9	905.6	559984	647965	770999	1.823	275.0	0.016	21.9
300	0.001500	0.001378	705.3	767.8	470080	557116	649661	1.824	231.7	0.016	21.9
400	0.001491	0.001366	609.8	665.7	408887	487228	562453	1.835	200.6	0.016	21.9
500	0.001502	0.001365	602.0	662.5	400855	485415	557392	1.855	198.8	0.016	21.9
600	0.001585	0.001432	867.0	960.0	546946	670470	805129	1.887	287.2	0.016	22.0
700	0.001573	0.001398	664.5	748.0	422305	535238	621853	1.872	221.8	0.016	21.9
800	0.001579	0.001390	576.9	655.4	365270	471480	542230	1.912	193.4	0.016	21.9
900	0.001684	0.001462	932.6	1074.2	553924	734938	882215	1.913	314.7	0.016	22.0
1000	0.001639	0.001426	636.6	731.8	388437	513188	601630	1.929	214.6	0.016	22.0
1064	0.001567	0.001348	440.4	511.9	280964	379652	418361	1.913	149.2	0.016	22.0
1897	0.001736	0.001404	430.7	532.7	248151	379549	420891	2.003	150.1	0.016	22.0
2000	0.001806	0.001436	503.4	632.9	278744	440611	495461	2.021	176.7	0.016	22.0
2858	0.001812	0.001405	388.6	501.1	214469	356623	386761	2.051	138.0	0.016	22.0
3000	0.001883	0.001484	524.3	665.4	278393	448368	518214	2.042	184.9	0.016	22.0
3980	0.001955	0.001483	470.3	620.2	240608	418347	472707	2.075	168.6	0.016	22.0
4000	0.001924	0.001465	408.2	536.1	212201	366007	409515	2.080	146.1	0.016	22.0
5000	0.002035	0.001553	503.1	659.5	247165	424773	504307	2.111	179.9	0.016	21.9
6000	0.002067	0.001560	466.9	618.5	225928	396490	470184	2.114	167.7	0.016	21.9
6118	0.002049	0.001526	430.5	578.1	210139	378887	436054	2.117	155.5	0.016	21.9
7000	0.002071	0.001500	357.7	493.7	172699	329057	366538	2.125	130.7	0.016	21.9
8000	0.002140	0.001570	455.1	620.1	212725	394863	463861	2.147	165.5	0.016	21.9
9000	0.002104	0.001547	347.5	472.7	165163	305628	353900	2.149	126.2	0.016	21.9
10000	0.002198	0.001614	439.1	598.0	199796	370599	447430	2.165	159.6	0.016	21.9
11995	0.002292	0.001651	481.1	667.8	209953	404530	494199	2.151	176.3	0.016	21.9
35557	0.002892	0.002061	322.1	452.1	111382	219399	332415	2.400	118.6	0.016	21.9
35572	0.002739	0.001937	177.1	250.3	64654	129240	183269	2.381	65.4	0.016	21.9
35636	0.002780	0.001973	207.9	292.9	74762	148498	214869	2.378	76.6	0.016	21.9
40000	0.002992	0.002143	273.7	382.2	91483	178387	281854	2.409	100.5	0.016	21.9

Filename : P22390
Material : PlusRide , A-Str., Anchorage

Beam width (cm) : 5.057 Beam depth (cm) : 5.199 Bulk density (KN/m^3) : 22.94 Deflection (mm) : 0.6731

Rep	Tens stm (m/m)	Comp stm (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.001420	0.000833	485.2	827.3	341737	993225	540320	1.779	216.6	0.018	22.2
10	0.001410	0.000815	356.8	617.1	253150	757140	399420	1.735	162.3	0.018	22.2
20	0.001413	0.000827	372.4	636.1	263637	769206	414948	1.701	168.6	0.018	22.2
30	0.001463	0.000855	485.6	830.8	331898	971437	541430	1.701	220.0	0.018	22.2
40	0.001496	0.000885	550.8	930.9	368179	1051832	611331	1.686	248.4	0.018	22.2
50	0.001480	0.000882	507.2	850.8	342833	964542	561405	1.683	228.1	0.018	22.2
60	0.001450	0.000892	440.4	715.3	303745	801475	481519	1.750	195.7	0.017	22.2
70	0.001487	0.000895	523.2	868.8	351873	970264	576939	1.721	234.4	0.018	22.2
80	0.001459	0.000870	432.1	724.5	296257	832571	478189	1.731	194.3	0.018	22.2
90	0.001487	0.000916	522.7	848.3	351542	925723	571389	1.743	232.2	0.018	22.2
100	0.001441	0.000879	405.5	664.6	281433	756037	444907	1.746	180.8	0.017	22.2
200	0.001457	0.000903	464.8	750.2	318997	830848	507038	1.721	206.0	0.017	22.2
300	0.001511	0.000960	661.3	1041.3	437715	1085135	714529	1.712	290.4	0.017	22.2
400	0.001494	0.000910	477.0	783.0	319183	860151	523682	1.707	212.8	0.017	22.1
500	0.001468	0.000915	462.8	742.5	315377	811610	503707	1.698	204.7	0.017	22.1
600	0.001497	0.000948	505.5	798.9	337614	843052	546980	1.718	222.3	0.017	22.1
700	0.001491	0.000921	451.0	730.5	302387	793339	492613	1.710	200.2	0.017	22.1
800	0.001462	0.000891	375.0	615.2	256577	690465	411625	1.709	167.3	0.017	22.1
900	0.001486	0.000931	435.2	694.3	293003	745556	472645	1.676	192.1	0.017	22.1
1000	0.001466	0.000906	379.0	613.4	258500	677082	413838	1.662	168.2	0.018	22.1
2000	0.001448	0.000906	357.3	571.2	246710	630541	388320	1.610	157.8	0.017	22.0
3000	0.001454	0.000924	333.6	525.4	229514	568762	360588	1.601	146.5	0.018	22.0
4000	0.001474	0.000949	358.3	556.3	243138	586096	384996	1.531	156.4	0.018	22.0
5000	0.001489	0.000952	333.6	521.6	224143	547842	359478	1.517	146.1	0.018	22.0
5889	0.001475	0.000934	305.7	482.7	207229	516642	330629	1.489	134.4	0.018	21.9
6000	0.001494	0.000976	370.6	567.5	247999	581524	396090	1.487	161.0	0.017	21.9
7000	0.001463	0.000939	264.9	413.0	181083	439963	285143	1.478	115.9	0.017	22.0
8000	0.001535	0.001022	441.5	662.9	287708	648606	468205	1.445	190.3	0.017	22.0
8907	0.001533	0.000995	402.9	620.6	262782	623556	431593	1.417	175.4	0.017	22.0
9000	0.001506	0.000960	316.6	497.1	210208	518056	341723	1.424	138.9	0.017	22.0
10000	0.001532	0.000988	362.6	562.2	236733	569141	389430	1.410	158.3	0.017	22.0
16142	0.001472	0.000982	216.7	324.9	147215	330898	229666	1.310	93.3	0.018	22.0
20000	0.001575	0.001076	386.9	566.4	245641	526475	406074	1.300	165.0	0.017	22.0
70717	0.001468	0.001153	120.0	152.7	81768	132425	118718	0.992	48.2	0.017	22.0
70732	0.001444	0.001150	97.0	121.8	67212	105893	95413	0.988	38.8	0.016	22.0
70747	0.001490	0.001205	178.4	220.5	119711	182911	174188	0.973	70.8	0.016	22.0
70762	0.001405	0.001116	62.0	78.0	44110	69922	61022	0.986	24.8	0.017	21.9
70777	0.001460	0.001192	141.4	173.3	96868	145367	137576	0.976	55.9	0.016	22.0
70905	0.001351	0.001097	30.7	37.9	22729	34518	29956	0.950	12.2	0.017	21.9
74001	0.001496	0.001196	134.5	168.2	89918	140561	132032	0.961	53.7	0.017	21.9

Filename : P23250
Material : PlusRide , A-Str., Anchorage
Beam width (cm) : 5.010 Beam depth (cm) : 4.864 Bulk density (KN/m^3) : 22.85 Deflection (mm) : 0.9347

Rep	Tens stm (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.001919	0.001493	583.5	750.0	304063	502411	446306	3.260	204.2	0.019	22.0
11	0.001892	0.001523	545.2	677.5	288142	444948	410839	2.890	188.0	0.018	22.0
20	0.001931	0.001562	585.7	724.3	303332	463875	440397	2.855	201.5	0.018	22.0
30	0.001994	0.001597	746.5	931.7	374419	583289	563549	2.847	257.9	0.017	22.0
40	0.001958	0.001588	635.1	782.9	324410	492910	476844	2.814	218.2	0.018	22.0
50	0.002006	0.001618	751.4	931.3	374667	575539	565514	2.811	258.8	0.018	22.0
60	0.002009	0.001591	783.0	988.3	389850	621060	594087	2.785	271.9	0.018	22.0
70	0.002006	0.001597	680.7	854.6	339413	535093	515270	2.807	235.8	0.018	22.0
80	0.001964	0.001576	576.0	717.5	293300	455173	434482	2.767	198.8	0.018	22.0
90	0.001910	0.001499	398.2	507.5	208491	338586	303449	2.771	138.9	0.018	22.0
100	0.001979	0.001597	635.0	786.7	320935	492517	477830	2.745	218.7	0.018	22.0
200	0.001958	0.001576	452.5	562.0	231134	356520	340889	2.713	156.0	0.018	21.9
300	0.001976	0.001600	497.0	613.6	251550	383445	373399	2.655	170.9	0.018	22.0
400	0.002014	0.001648	600.6	734.2	298160	445548	449264	2.617	205.6	0.018	22.0
500	0.002020	0.001636	608.4	751.3	301118	459248	457145	2.570	209.2	0.018	22.0
600	0.001964	0.001567	445.5	558.2	226887	356127	336945	2.555	154.2	0.018	22.0
700	0.001862	0.001511	210.0	258.8	112726	171306	157633	2.520	72.1	0.018	22.0
800	0.001982	0.001606	461.7	569.7	233003	354665	346798	2.502	158.7	0.018	22.0
900	0.002017	0.001630	508.2	629.0	251923	385892	382266	2.514	174.9	0.018	22.0
1000	0.002032	0.001651	548.8	675.6	270056	409267	411825	2.483	168.5	0.018	22.0
2000	0.002041	0.001725	597.6	707.0	292755	409756	440397	2.376	201.5	0.017	21.9
3000	0.001934	0.001672	356.6	412.5	184386	246772	260100	2.283	119.0	0.018	22.0
4000	0.002009	0.001728	473.1	549.8	235568	318108	345812	2.234	158.3	0.018	22.0
5000	0.001976	0.001725	401.7	460.0	203334	266616	291624	2.175	133.5	0.017	21.9
6000	0.002006	0.001728	422.2	489.9	210518	283447	308372	2.130	141.1	0.017	22.0
7000	0.002023	0.001746	444.1	514.5	219468	294658	324141	2.122	148.3	0.017	22.0
8000	0.001958	0.001678	263.7	307.7	134687	183414	193101	2.086	88.4	0.017	22.0
9000	0.001904	0.001630	147.9	172.8	77679	106004	108376	2.051	49.6	0.017	22.0
10000	0.001952	0.001716	266.9	303.5	136728	176808	193101	2.032	88.4	0.017	22.0
14421	0.001985	0.001749	274.0	310.8	138045	177705	198031	1.987	90.6	0.017	22.0
20000	0.002014	0.001773	209.8	238.3	104135	134418	151724	1.969	69.4	0.017	22.0
30000	0.002056	0.001857	126.8	140.5	61685	75666	90642	1.830	41.5	0.017	22.0
35026	0.002119	0.001979	260.6	279.0	123000	141030	183248	1.740	83.9	0.016	22.0
40000	0.002175	0.002065	295.2	310.9	135687	150559	205912	1.703	94.2	0.016	22.0
50000	0.002155	0.002071	152.0	158.2	70570	76369	105418	1.621	48.2	0.016	22.0
60000	0.002220	0.002208	265.9	267.3	119773	121069	181283	1.576	83.0	0.016	22.0
70000	0.002122	0.002193	166.5	161.1	78472	73439	111327	1.473	50.9	0.015	22.0
80000	0.002175	0.002324	319.2	298.7	146739	128530	209849	1.410	96.0	0.014	22.0
90000	0.002125	0.002241	129.5	122.8	60955	54797	85712	1.359	39.2	0.014	22.0
93863	0.002116	0.002277	138.4	128.6	65403	56485	90642	1.344	41.5	0.014	22.0

Filename : *P1470*
Material : PlusRide , A-Str., Anchorage
Beam width (cm) : 5.088 Beam depth (cm) : 4.989 Bulk density (KN/m^3) : 22.90 Deflection (mm) : 0.2464

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000519	0.000627	3630.1	3000.7	7001183	4783751	8263658	0.336	1092.2	0.005	-2.6
13	0.000542	0.000635	3513.8	3002.4	6479025	4730315	8144374	0.317	1076.4	0.005	-2.6
20	0.000542	0.000632	3530.7	3031.0	6509983	4797886	8204361	0.302	1084.3	0.004	-2.6
30	0.000544	0.000642	3545.6	3002.7	6519705	4675844	8178849	0.322	1080.9	0.004	-2.6
40	0.000542	0.000642	3588.0	3030.1	6615615	4718662	8263658	0.353	1092.2	0.004	-2.6
50	0.000553	0.000641	3554.1	3066.5	6429588	4786233	8280895	0.333	1094.5	0.004	-2.6
60	0.000553	0.000632	3527.5	3086.5	6381460	4885797	8280895	0.324	1094.5	0.004	-2.6
70	0.000550	0.000630	3533.2	3082.2	6426485	4890417	8280895	0.348	1094.5	0.004	-2.6
80	0.000559	0.000633	3515.4	3101.9	6291756	4898484	8289169	0.349	1095.6	0.004	-2.6
90	0.000535	0.000629	3588.6	3052.8	6708973	4855321	8298133	0.330	1096.7	0.004	-2.6
100	0.000554	0.000639	3562.9	3089.4	6428002	4833326	8323644	0.325	1100.1	0.004	-2.7
200	0.000547	0.000624	3551.0	3110.3	6493987	4982120	8340882	0.327	1102.4	0.004	-2.7
300	0.000557	0.000627	3542.4	3146.9	6357052	5016940	8382941	0.346	1108.0	0.004	-2.6
400	0.000523	0.000614	3574.7	3045.5	6835358	4961159	8272621	0.313	1093.3	0.004	-2.7
500	0.000526	0.000593	3513.0	3115.8	6679255	5254266	8306407	0.320	1097.9	0.004	-2.6
600	0.000542	0.000590	3391.0	3117.0	6252524	5282880	8169886	0.356	1079.8	0.004	-2.7
700	0.000553	0.000630	3479.5	3051.8	6294652	4842152	8178849	0.319	1080.9	0.004	-2.7
800	0.000547	0.000587	3392.3	3159.9	6203845	5382720	8229872	0.338	1087.7	0.004	-2.7
900	0.000556	0.000612	3420.8	3104.5	6155304	5069756	8187123	0.347	1082.1	0.004	-2.7
1000	0.000556	0.000577	3281.6	3162.9	5904740	5485248	8101625	0.366	1070.8	0.005	-2.7
2000	0.000575	0.000569	3187.6	3220.9	5542408	5659071	8058876	0.379	1065.2	0.005	-2.7
3000	0.000584	0.000574	3175.6	3233.3	5437052	5636525	8058876	0.398	1065.2	0.005	-2.6
4000	0.000592	0.000569	3117.0	3239.4	5269573	5691547	7990616	0.433	1056.2	0.005	-2.6
5000	0.000596	0.000559	2982.5	3181.4	5004322	5693822	7743775	0.425	1023.5	0.005	-2.6
6000	0.000603	0.000571	2978.6	3149.7	4936131	5519448	7701026	0.443	1017.8	0.005	-2.7
7000	0.000615	0.000557	2884.9	3185.7	4688186	5716920	7615528	0.492	1006.5	0.005	-2.6
8000	0.000606	0.000568	2901.6	3099.6	4784854	5460219	7538993	0.467	996.4	0.005	-2.6
9000	0.000618	0.000562	2873.1	3162.7	4646472	5630388	7572779	0.420	1000.9	0.004	-2.6
10000	0.000603	0.000577	2900.9	3035.8	4807332	5264953	7462459	0.436	986.3	0.005	-2.6
20000	0.000538	0.000533	2721.5	2744.3	5059758	5144911	6873763	0.365	908.5	0.004	-2.7
24844	0.000502	0.000484	2554.3	2648.6	5087131	5469735	6541149	0.324	864.5	0.004	-2.7
30000	0.000477	0.000474	2383.0	2397.9	4997910	5060999	6012371	0.289	794.6	0.004	-2.6
40000	0.000298	0.000413	2171.3	1567.7	7286636	3798524	4579659	0.170	605.3	0.005	-2.7
50000	0.000244	0.000250	1379.7	1346.8	5646178	5380513	3428332	0.048	453.1	0.003	-2.7
60000	0.000174	0.000191	1160.8	1061.1	6659191	5563851	2788752	0.038	368.6	0.003	-2.7

Filename : P2480
Material : PlusRide , A-Str., Anchorage
Beam width (cm) : 5.037 Beam depth (cm) : 4.973 Bulk density (KN/m^3) : 22.85 Deflection (mm) : 0.2819

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000763	0.000717	4053.3	4314.5	5313356	6020300	9215168	0.699	1367.2	0.004	-2.6
13	0.000773	0.000697	3853.3	4273.2	4982948	6128138	8934541	0.589	1325.5	0.004	-2.6
20	0.000776	0.000718	3894.0	4209.1	5016388	5861026	8919372	0.609	1323.3	0.004	-2.6
30	0.000770	0.000732	3916.8	4124.2	5084787	5637559	8858007	0.593	1314.3	0.004	-2.6
40	0.000758	0.000715	3866.6	4100.2	5098439	5733124	8774577	0.655	1301.8	0.004	-2.6
50	0.000772	0.000699	3785.2	4180.6	4904345	5982723	8759408	0.618	1299.6	0.004	-2.6
60	0.000764	0.000684	3760.7	4203.2	4920203	6145927	8751824	0.645	1298.5	0.004	-2.6
70	0.000767	0.000696	3797.8	4188.2	4949369	6019128	8782162	0.610	1303.0	0.004	-2.6
80	0.000800	0.000699	3721.6	4261.1	4651298	6097869	8759408	0.630	1299.6	0.004	-2.6
90	0.000785	0.000699	3760.9	4226.1	4789819	6047742	8774577	0.643	1301.8	0.004	-2.6
100	0.000763	0.000688	3815.1	4228.1	5001150	6142204	8842838	0.560	1312.0	0.003	-2.6
200	0.000785	0.000718	3777.1	4129.7	4810297	5750430	8698732	0.679	1290.6	0.004	-2.6
300	0.000781	0.000690	3748.3	4242.1	4800989	6149444	8774577	0.611	1301.8	0.004	-2.6
400	0.000782	0.000702	3716.5	4142.6	4751138	5903016	8638056	0.563	1281.6	0.003	-2.7
500	0.000787	0.000690	3657.4	4170.9	4649023	6046019	8592549	0.644	1274.8	0.004	-2.6
600	0.000793	0.000703	3684.0	4152.3	4647713	5904395	8607718	0.679	1277.1	0.004	-2.6
700	0.000819	0.000745	3664.2	4030.7	4471408	5410438	8462923	0.754	1255.7	0.005	-2.6
800	0.000819	0.000715	3646.1	4177.7	4449275	5841582	8584965	0.721	1273.7	0.004	-2.7
900	0.000787	0.000688	3579.4	4090.7	4549942	5942732	8417416	0.624	1248.9	0.004	-2.6
1000	0.000818	0.000705	3624.4	4206.6	4430796	5969002	8584965	0.681	1273.7	0.004	-2.7
2000	0.000851	0.000711	3465.8	4148.8	4073773	5837583	8326402	0.704	1235.4	0.004	-2.6
3000	0.000834	0.000694	3434.5	4127.3	4116177	5944317	8265726	0.704	1226.3	0.004	-2.6
4000	0.000858	0.000708	3395.2	4117.2	3956213	5817518	8205050	0.721	1217.3	0.004	-2.6
5000	0.000858	0.000703	3297.8	4024.4	3842652	5722574	7991995	0.742	1185.7	0.005	-2.7
6000	0.000851	0.000666	3268.3	4175.0	3841618	6268589	8083698	0.688	1199.3	0.004	-2.6
7000	0.000872	0.000712	3224.7	3946.5	3699581	5541305	7825136	0.749	1161.0	0.005	-2.6
8000	0.000855	0.000678	3196.8	4032.9	3737917	5948799	7863058	0.680	1166.6	0.004	-2.7
8689	0.000882	0.000681	3156.8	4089.3	3578919	6005683	7855474	0.677	1165.5	0.004	-2.6
9000	0.000878	0.000673	3087.8	4023.6	3518450	5974586	7703784	0.696	1142.9	0.004	-2.6
10000	0.000904	0.000687	3077.0	4051.4	3402200	5898397	7711368	0.707	1144.1	0.004	-2.6
13655	0.000842	0.000641	2903.8	3815.3	3449362	5955143	7270778	0.632	1078.7	0.004	-2.6
20000	0.000641	0.000471	2235.8	3042.4	3489766	6461925	5682652	0.356	843.1	0.004	-2.7
30000	0.000249	0.000232	1329.6	1423.4	5343694	6123794	3031249	0.042	449.7	0.003	-2.7
40000	0.000176	0.000152	1101.8	1274.6	6266866	8387078	2605827	0.005	386.6	0.001	-2.7
50000	0.000148	0.000116	930.3	1180.8	6306788	10159783	2294311	0.003	340.4	0	-2.7

Filename : P3490
Material : PlusRide , A-Str., Anchorage
Beam width (cm) : 5.080 Beam depth (cm) : 5.032 Bulk density (KN/m^3) : 23.21 Deflection (mm) : 0.3150

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000718	0.000696	5546.4	5724.6	7723090	8227114	10989941	0.808	1902.6	0.005	-2.7
13	0.000724	0.000665	5213.4	5680.9	7199759	8549111	10605889	0.674	1836.1	0.004	-2.7
20	0.000720	0.000666	5189.5	5607.5	7211481	8419485	10514875	0.698	1820.4	0.004	-2.7
30	0.000739	0.000657	5060.0	5691.1	6846942	8661499	10450062	0.693	1809.1	0.004	-2.7
40	0.000738	0.000653	5073.8	5734.0	6879417	8786299	10501775	0.680	1818.1	0.004	-2.7
50	0.000736	0.000662	5038.4	5605.8	6845287	8473955	10352153	0.673	1792.2	0.004	-2.7
60	0.000758	0.000660	4953.5	5691.5	6531634	8622887	10332847	0.718	1788.8	0.004	-2.7
70	0.000784	0.000676	4922.0	5702.6	6280311	8430517	10306646	0.721	1784.3	0.004	-2.7
80	0.000800	0.000706	4964.3	5624.0	6204466	7963036	10286651	0.732	1780.9	0.004	-2.7
90	0.000760	0.000670	4947.6	5607.4	6511155	8362946	10254244	0.707	1775.3	0.004	-2.7
100	0.000793	0.000697	4972.1	5652.0	6272657	8105762	10319747	0.722	1786.5	0.004	-2.6
200	0.000755	0.000659	4894.9	5614.8	6479852	8525668	10202532	0.757	1766.2	0.004	-2.7
300	0.000787	0.000666	4761.2	5624.0	6052155	8444307	10059116	0.771	1741.5	0.004	-2.6
400	0.000846	0.000681	4625.8	5749.3	5465942	8443617	10000508	0.807	1731.3	0.004	-2.6
500	0.000843	0.000676	4553.3	5676.6	5399337	8391905	9857092	0.809	1706.5	0.004	-2.7
600	0.000863	0.000654	4427.7	5839.7	5132431	8927646	9824686	0.833	1700.9	0.004	-2.7
700	0.000872	0.000678	4438.4	5706.5	5092095	8417416	9739877	0.866	1686.2	0.004	-2.7
800	0.000879	0.000699	4469.2	5622.3	5084028	8045776	9713676	0.866	1681.7	0.004	-2.7
900	0.000882	0.000657	4260.4	5719.1	4830016	8703559	9525443	0.886	1649.0	0.005	-2.7
1000	0.000878	0.000659	4221.1	5625.0	4809952	8541526	9408228	0.908	1628.7	0.005	-2.7
2000	0.001039	0.000690	3844.0	5786.7	3701443	8388457	9011076	1.048	1560.0	0.005	-2.6
3000	0.001125	0.000679	3546.8	5872.4	3152877	8642883	8627024	1.098	1493.5	0.005	-2.7
4000	0.001223	0.000670	3239.8	5910.9	2648507	8815947	8164370	1.205	1413.5	0.005	-2.6
5000	0.001360	0.000697	3029.2	5909.5	2226809	8474645	7812725	1.264	1352.6	0.005	-2.7
5503	0.001411	0.000715	2964.9	5849.4	2101251	8178849	7676204	1.283	1328.9	0.005	-2.6
6000	0.001490	0.000721	2835.7	5858.9	1903227	8124379	7454874	1.352	1290.6	0.005	-2.7
7000	0.001629	0.000769	2707.3	5734.6	1662453	7459011	7174937	1.493	1242.1	0.005	-2.6
8000	0.001955	0.000830	2446.3	5762.2	1251443	6943265	6699527	1.781	1159.8	0.005	-2.7
9000	0.002496	0.000954	2098.9	5493.3	841052	5760704	5924736	2.031	1025.7	0.005	-2.6
10000	0.002993	0.001043	1825.0	5237.9	609697	5022042	5280191	2.306	914.1	0.005	-2.6
11557	0.003577	0.001213	1432.4	4225.0	400406	3483630	4173406	2.407	722.5	0.006	-2.6

Filename : P4460
Material : PlusRide , A-Str., Anchorage
Beam width (cm) : 5.103 Beam depth (cm) : 5.077 Bulk density (KN/m^3) : 23.33 Deflection (mm) : 0.2057

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000574	0.000453	3194.4	4045.5	5568678	8931783	10564519	0.410	1233.1	0.005	-2.1
11	0.000566	0.000444	3164.4	4035.1	5588949	9087610	10496948	0.354	1225.2	0.004	-2.1
20	0.000566	0.000429	3069.0	4049.3	5420435	9436497	10332847	0.358	1206.0	0.004	-2.1
30	0.000574	0.000435	3095.7	4081.7	5396717	9382027	10419724	0.363	1216.2	0.004	-2.1
40	0.000554	0.000431	3128.2	4026.6	5643833	9350999	10419724	0.345	1216.2	0.004	-2.1
50	0.000554	0.000429	3109.0	4015.8	5609220	9358584	10371459	0.342	1210.6	0.004	-2.1
60	0.000551	0.000419	3063.0	4033.2	5556267	9633005	10303888	0.344	1202.7	0.004	-2.1
70	0.000545	0.000437	3099.4	3871.5	5683480	8868349	10188052	0.339	1189.1	0.004	-2.1
80	0.000560	0.000428	3084.1	4040.5	5505175	9448908	10352153	0.341	1208.3	0.004	-2.1
90	0.000571	0.000422	3058.5	4139.2	5359621	9816412	10410071	0.339	1215.1	0.004	-2.1
100	0.000569	0.000425	3039.7	4074.3	5340729	9595082	10303888	0.341	1202.7	0.004	-2.1
200	0.000563	0.000429	3110.5	4082.5	5522757	9513721	10448683	0.352	1219.6	0.004	-2.1
300	0.000560	0.000435	3113.2	4008.8	5557025	9213789	10371459	0.360	1210.6	0.004	-2.0
400	0.000568	0.000416	3052.5	4168.4	5377204	10027399	10429377	0.360	1217.3	0.004	-2.1
500	0.000578	0.000416	3026.4	4208.8	5235098	10124618	10419724	0.362	1216.2	0.004	-2.1
600	0.000563	0.000426	3089.6	4083.5	5485800	9582671	10410071	0.358	1215.1	0.004	-2.1
700	0.000578	0.000425	3050.8	4153.4	5277295	9781247	10410071	0.364	1215.1	0.004	-2.1
800	0.000584	0.000434	3053.2	4112.9	5227444	9486141	10371459	0.362	1210.6	0.004	-2.1
900	0.000583	0.000432	3074.8	4145.6	5277916	9594393	10448683	0.377	1219.6	0.004	-2.0
1000	0.000571	0.000435	3051.0	4001.7	5346383	9197930	10245970	0.371	1195.9	0.004	-2.1
2000	0.000599	0.000434	2950.5	4076.0	4925995	9400643	10130134	0.415	1182.4	0.004	-2.0
3000	0.000597	0.000435	2926.9	4019.4	4898691	9238611	10023951	0.425	1170.0	0.004	-2.0
4000	0.000600	0.000434	2924.9	4050.7	4871249	9342725	10052910	0.429	1173.4	0.004	-2.0
5000	0.000603	0.000440	2873.6	3945.1	4762101	8975911	9840544	0.424	1148.6	0.004	-2.0
6000	0.000614	0.000429	2830.3	4049.0	4610687	9435808	9859850	0.412	1150.8	0.004	-2.1
7000	0.000615	0.000429	2774.9	3979.3	4509468	9273086	9675754	0.423	1129.4	0.004	-2.0
8000	0.000618	0.000434	2775.7	3958.4	4488990	9129670	9656448	0.416	1127.1	0.004	-2.0
9000	0.000624	0.000431	2734.9	3965.2	4380807	9208273	9579224	0.404	1118.2	0.004	-2.0
10000	0.000617	0.000435	2751.8	3901.5	4461065	8967637	9550265	0.422	1114.8	0.004	-2.0
20000	0.000620	0.000404	2333.4	3582.0	3764670	8871107	8362946	0.384	976.1	0.004	-2.1
30000	0.000493	0.000317	1823.5	2833.6	3697375	8929025	6566591	0.247	766.5	0.004	-2.1
40000	0.000204	0.000150	975.0	1322.6	4776787	8789057	3321942	0.035	387.7	0.003	-2.1
50000	0.000140	0.000097	728.6	1053.7	5202140	10879621	2549357	0.010	297.6	0.002	-2.1
60000	0.000142	0.000092	620.2	950.3	4381497	10286651	2221086	0.003	259.2	0.002	-2.1
70000	0.000103	0.000086	648.7	771.7	6309546	8929715	2085875	0.006	243.5	0.002	-2.1

Filename : P5460
Material : PlusRide , A-Str., Anchorage
Beam width (cm) : 5.052 Beam depth (cm) : 4.933 Bulk density (KN/m^3) : 22.79 Deflection (mm) : 0.2108

Rep	Tens strn (m/m)	Comp str (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000691	0.000620	2732.1	3047.4	3951938	4916549	8564969	0.505	929.9	0.005	-2.1
13	0.000691	0.000605	2550.5	2914.9	3689170	4818571	8087146	0.452	878.1	0.005	-2.1
20	0.000691	0.000599	2551.8	2945.3	3691100	4917445	8129205	0.454	882.6	0.005	-2.1
30	0.000693	0.000590	2512.2	2950.0	3626012	4999702	8066461	0.448	875.8	0.005	-2.1
40	0.000700	0.000593	2492.8	2943.8	3559682	4964124	8025091	0.452	871.3	0.005	-2.1
50	0.000705	0.000592	2460.2	2931.2	3490870	4955368	7952693	0.458	863.4	0.005	-2.1
60	0.000702	0.000594	2493.2	2943.1	3552787	4950679	8025091	0.458	871.3	0.005	-2.1
70	0.000685	0.000614	2535.6	2830.9	3699512	4611721	7952693	0.458	863.4	0.005	-2.1
80	0.000687	0.000597	2523.9	2901.6	3674483	4856355	8025091	0.456	871.3	0.005	-2.1
90	0.000693	0.000599	2523.2	2918.7	3641870	4872834	8045776	0.455	873.5	0.005	-2.1
100	0.000684	0.000594	2539.4	2921.3	3713233	4913998	8076803	0.460	876.9	0.005	-2.2
200	0.000691	0.000599	2437.7	2813.7	3526103	4697632	7765839	0.452	843.1	0.005	-2.2
300	0.000690	0.000593	2503.6	2912.4	3629183	4911377	8004406	0.447	869.0	0.005	-2.1
400	0.000696	0.000600	2501.6	2898.9	3595191	4827741	7983721	0.459	866.8	0.005	-2.1
500	0.000685	0.000587	2486.5	2903.0	3627873	4945094	7963036	0.455	864.5	0.005	-2.1
600	0.000693	0.000592	2495.7	2923.2	3602224	4941853	8004406	0.452	869.0	0.005	-2.0
700	0.000685	0.000600	2470.1	2819.4	3603948	4695495	7827894	0.452	849.9	0.005	-2.0
800	0.000697	0.000589	2421.4	2868.9	3472529	4874696	7807209	0.463	847.6	0.005	-2.0
900	0.000703	0.000608	2480.8	2869.9	3527482	4720938	7910634	0.464	858.9	0.005	-2.1
1000	0.000697	0.000612	2499.1	2845.7	3583952	4646954	7910634	0.461	858.9	0.005	-2.1
2000	0.000711	0.000600	2432.2	2878.8	3422195	4794369	7838236	0.464	851.0	0.005	-2.0
3000	0.000705	0.000594	2414.4	2862.1	3425850	4814434	7786524	0.466	845.4	0.005	-2.0
4000	0.000709	0.000606	2426.1	2837.5	3420885	4679154	7776181	0.472	844.3	0.005	-2.1
5000	0.000717	0.000614	2421.7	2827.2	3379033	4605653	7755496	0.475	842.0	0.005	-2.0
6000	0.000729	0.000605	2374.6	2860.0	3259129	4727902	7713437	0.476	837.5	0.005	-2.0
7000	0.000721	0.000611	2451.2	2893.7	3399166	4736934	7889949	0.485	856.6	0.005	-2.0
6000	0.000726	0.000614	2404.7	2842.4	3314013	4630337	7745154	0.492	840.9	0.005	-2.1
9000	0.000736	0.000605	2398.7	2918.6	3258922	4824707	7827894	0.498	849.9	0.005	-2.0
10000	0.000755	0.000600	2331.8	2933.5	3086823	4885590	7723779	0.503	838.6	0.005	-2.0
20000	0.000788	0.000615	2276.1	2915.4	2887764	4737761	7599669	0.533	825.1	0.005	-2.0
30000	0.000851	0.000623	2229.0	3044.9	2620031	4889038	7651382	0.579	830.7	0.005	-2.3
40000	0.000937	0.000633	2106.7	3117.9	2247908	4923857	7474870	0.652	811.5	0.005	-2.2
50000	0.000988	0.000647	2060.0	3146.9	2085324	4866629	7402472	0.704	803.7	0.005	-2.3
60000	0.001040	0.000651	1879.6	3002.3	1807386	4611100	6872798	0.743	746.2	0.006	-2.3
70000	0.001137	0.000679	1860.8	3113.5	1636804	4582624	6924649	0.812	751.8	0.006	-2.3
80000	0.001299	0.000669	1698.2	3298.2	1307154	4930132	6665121	0.897	723.6	0.006	-2.3
90000	0.001493	0.000709	1591.8	3350.8	1066174	4724523	6416004	0.991	696.6	0.006	-2.3
100000	0.001733	0.000755	1504.4	3451.0	868218	4568420	6229081	1.071	676.3	0.006	-2.3
116070	0.001950	0.000791	1374.5	3388.4	704738	4282829	5813864	1.126	631.2	0.006	-2.3
125470	0.002049	0.000818	1321.8	3310.6	645220	4047365	5616598	1.167	609.8	0.006	-2.3
166670	0.002669	0.000973	972.2	2666.4	364318	2740625	4235805	1.249	459.9	0.006	-2.3

Filename : P28490 | Beam width (in) : 1.962 | Bulk density (lb/ft^3) : 146.5

Material : PlusRide Asphalt, A Street, Anchorage | Beam depth (in) : 1.979 | Deflection (in) : 0.012

Rep	Tens strn	Comp strn	Tens strs	Comp strs	Tens stiff	Comp stiff	Flex stiff	Disp engy	Max load	Phase lag	Temp
1	581	527	635	700	1093300	1326900	1343800	0.07699	341	0.005	28.2
11	589	524	615	690	1045400	1316500	1312900	0.06809	333	0.004	28.2
23	580	536	620	670	1069300	1248600	1299000	0.07059	330	0.005	28.2
30	583	550	629	666	1078900	1211400	1304900	0.05375	331	0.004	28.2
40	586	600	653	637	1116000	1061300	1301900	0.06140	331	0.004	28.2
50	648	578	599	671	923740	1161100	1277000	0.05823	324	0.004	28.2
60	597	527	602	682	1008100	1293600	1291000	0.05860	328	0.004	28.2
70	603	533	595	673	985660	1261400	1274000	0.06184	323	0.004	28.2
80	593	542	607	663	1023300	1223400	1279000	0.05691	325	0.004	28.2
90	617	520	582	690	943270	1327300	1274000	0.05537	323	0.004	28.2
100	572	533	600	643	1047900	1205600	1252100	0.06020	318	0.004	28.2
200	606	524	582	673	960230	1283700	1260000	0.06732	320	0.005	28.2
300	641	600	578	616	901520	1026400	1203200	0.07594	305	0.005	28.3
400	606	592	576	590	949510	997950	1176200	0.07714	299	0.006	28.3
500	641	589	561	610	875090	1037000	1179200	0.08026	299	0.006	28.4
600	636	533	545	651	857260	1219600	1197200	0.07237	304	0.004	28.4
700	659	572	538	619	816600	1081900	1161300	0.08871	295	0.006	28.5
800	654	520	522	657	798530	1263500	1174200	0.07332	298	0.005	28.4
900	656	529	513	636	782890	1202700	1146300	0.08467	291	0.005	28.4
1000	657	544	507	613	772250	1127300	1120400	0.07982	284	0.005	28.5
2000	760	572	465	617	611380	1078400	1069500	0.09999	272	0.005	28.8
3000	799	538	415	617	520140	1146700	1001700	0.09777	254	0.005	28.7
4000	831	553	398	599	479230	1084100	965740	0.09885	245	0.005	28.6
5000	903	556	380	617	420670	1110400	948780	0.11394	241	0.005	28.7
6000	973	553	356	626	365790	1133200	915850	0.12386	233	0.006	28.5
7000	1046	578	334	604	318930	1044000	866970	0.13080	220	0.006	28.6
8000	1149	586	320	628	278770	1072900	855990	0.14059	217	0.005	28.4
9000	1265	605	294	615	232560	1017000	803120	0.15605	204	0.006	28.3
10000	1445	594	276	672	191210	1130100	790150	0.17126	201	0.006	28.4
13579	2423	672	171	615	70390	914950	538740	0.24941	137	0.007	28.4

Filename : P29493
Material : PlusRide Asphalt, A Street, Anchorage

Beam width (in) : 1.902
Beam depth (in) : 1.973

Bulk density (lb/ft^3) : 146.1
Deflection (in) : 0.0127

Rep	Tens strn	Comp strn	Tens strs	Comp strs	Tens stiff	Comp stiff	Flex stiff	Dissp engy	Max load	Phase lag	Temp
1	717	708	655	663	913650	936870	1260000	0.09881	325	0.004	28.6
13	703	696	639	646	908720	928290	1228600	0.09203	317	0.004	28.6
20	718	696	622	642	865920	922440	1208000	0.09324	312	0.004	28.6
30	712	699	626	638	879330	913400	1209000	0.09204	312	0.004	28.6
40	706	685	616	635	872650	926570	1196200	0.09363	309	0.004	28.6
50	712	690	622	642	873760	931290	1209000	0.09364	312	0.004	28.6
60	709	694	627	640	883480	921810	1210900	0.09621	313	0.004	28.6
70	715	688	619	643	866000	934800	1207000	0.09412	312	0.004	28.6
80	717	678	611	646	852040	952190	1200100	0.09446	310	0.004	28.6
90	720	694	608	630	844820	907580	1183500	0.09577	305	0.004	28.6
100	718	688	611	637	850160	925360	1192300	0.09440	308	0.004	28.5
200	723	682	603	638	833950	935180	1185400	0.09304	306	0.004	28.5
300	723	676	591	632	818040	933570	1167800	0.09205	301	0.004	28.6
400	714	703	606	615	848670	874030	1166800	0.09386	301	0.004	28.7
600	724	682	571	606	788730	888120	1124600	0.09271	290	0.004	28.5
700	721	694	574	596	795430	858070	1117700	0.09324	289	0.004	28.5
800	718	693	572	593	796700	856020	1113800	0.09274	287	0.004	28.6
900	726	676	556	596	765920	881310	1100000	0.09202	284	0.004	28.5
1000	733	678	553	598	753870	881460	1098100	0.09236	283	0.004	28.5
2000	763	678	500	563	655560	830100	1012700	0.09642	261	0.005	28.6
3000	797	685	460	536	577680	781410	946960	0.09972	244	0.005	28.7
3440	815	690	443	523	543510	758610	917520	0.10214	237	0.005	28.6
3531	824	678	432	525	523910	773900	905750	0.10173	234	0.005	28.6
3632	833	672	420	521	504840	775570	890050	0.10119	230	0.005	28.7
3738	828	691	425	509	513080	736710	886120	0.10115	229	0.005	28.6
3815	827	682	421	510	509130	747620	882200	0.09969	228	0.005	28.7
3854	824	682	424	511	514080	749470	886120	0.10018	229	0.005	28.7
3890	833	690	419	506	503510	733960	877290	0.10287	226	0.005	28.7
3928	833	681	415	507	497760	744750	872380	0.10114	225	0.005	28.6
3968	834	678	417	513	499390	756480	879250	0.10017	227	0.005	28.6
4060	834	694	420	504	503120	726560	876310	0.10342	226	0.005	28.7
4060	836	678	409	505	489770	744550	864530	0.09879	223	0.005	28.7
5000	848	684	386	478	454920	699100	816450	0.09940	211	0.005	28.5
6000	866	666	355	461	409580	691950	766400	0.09681	198	0.005	28.7
7000	891	653	333	455	374170	697460	735980	0.09494	190	0.005	28.6
8000	881	623	305	431	346230	692140	682990	0.09128	176	0.005	28.6
8792	888	600	286	422	321580	703350	651590	0.08816	168	0.005	28.5
9000	878	602	287	418	326800	694620	650610	0.08707	168	0.005	28.6
10000	864	586	275	405	317780	692140	626070	0.08024	162	0.005	28.6
20000	420	277	153	232	363820	836300	352290	0.01898	91	0.004	28.6
30000	276	209	131	173	475860	830930	285560	0.00884	74	0.003	28.5
40000	216	167	123	160	570440	956120	265930	0.00573	69	0.003	28.5
44594	195	164	124	147	633610	898620	257100	0.00518	66	0.003	28.5

Filename : P6470
Material : PlusRide , A-Str., Anchorage

Beam width (cm) : 5.090 Beam depth (cm) : 4.892 Bulk density (KN/m^3) : 22.88 Deflection (mm) : 0.2413

Rep	Tens stm (m/m)	Comp stm (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000615	0.000592	4800.0	4993.5	7800314	8442238	12818495	0.270	1565.6	0.002	-12.0
13	0.000630	0.000569	4476.6	4957.0	7102540	8709075	12320676	0.195	1504.8	0.001	-12.0
20	0.000636	0.000565	4340.3	4890.1	6822189	8659431	12043497	0.201	1470.9	0.002	-12.0
30	0.000642	0.000568	4322.1	4889.3	6730485	8613234	12015917	0.201	1467.6	0.001	-12.0
40	0.000639	0.000574	4319.5	4813.2	6757790	8390526	11923524	0.196	1456.3	0.001	-12.0
50	0.000632	0.000566	4286.7	4783.1	6785576	8447754	11840784	0.189	1446.1	0.001	-12.0
60	0.000636	0.000572	4270.2	4748.4	6711938	8299512	11775971	0.198	1438.2	0.001	-12.0
70	0.000650	0.000554	4150.3	4864.4	6388769	8775956	11729774	0.192	1432.6	0.001	-12.0
80	0.000657	0.000554	4112.4	4875.2	6258660	8795952	11683578	0.192	1427.0	0.001	-12.0
90	0.000648	0.000563	4116.4	4737.1	6351191	8411211	11536025	0.199	1409.0	0.002	-12.0
100	0.000656	0.000550	4049.6	4828.8	6177162	8782851	11536025	0.194	1409.0	0.001	-12.1
200	0.000648	0.000560	4047.2	4682.2	6244319	8357430	11369855	0.208	1388.7	0.002	-12.0
300	0.000659	0.000568	3979.7	4616.8	6042985	8132653	11194722	0.216	1367.2	0.002	-12.0
400	0.000675	0.000551	3825.4	4683.6	5667690	8496019	11028553	0.220	1346.9	0.002	-12.0
500	0.000668	0.000553	3836.4	4632.7	5747465	8380873	10991320	0.204	1342.4	0.002	-12.0
600	0.000666	0.000554	3722.3	4472.8	5588949	8069908	10641054	0.206	1299.6	0.002	-12.0
700	0.000651	0.000526	3513.4	4349.4	5396027	8269863	10179089	0.182	1243.2	0.002	-12.0
800	0.000633	0.000535	3490.9	4132.7	5512828	7726537	9911563	0.189	1210.6	0.002	-12.0
900	0.000644	0.000519	3340.5	4146.8	5189798	7997511	9690233	0.200	1183.5	0.002	-12.0
1000	0.000590	0.000466	2946.5	3727.9	4993842	7993374	8619440	0.142	1052.8	0.002	-12.0
2000	0.000362	0.000305	1848.4	2191.0	5105196	7173558	5251163	0.035	641.3	0.001	-12.0
2456	0.000341	0.000283	1682.9	2028.3	4932269	7164595	4817399	0.032	588.4	0.001	-12.0

Filename : P7460
Material : PlusRide , A-Str., Anchorage
Beam width (cm) : 5.110 Beam depth (cm) : 4.971 Bulk density (KN/m^3) : 23.13 Deflection (mm) : 0.1994

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000429	0.000386	4484.4	4986.5	10450752	12921920	14729099	0.076	1565.6	0.002	-12.1
11	0.000420	0.000377	4321.4	4816.6	10284582	12777814	14209216	0.049	1510.4	0.001	-12.1
21	0.000393	0.000381	4433.0	4571.5	11269878	11984889	14039599	0.060	1492.4	0.001	-12.1
33	0.000393	0.000386	4461.9	4548.1	11343654	11785624	14049942	0.060	1493.5	0.001	-12.1
40	0.000405	0.000371	4301.1	4698.4	10612784	12664047	14007882	0.059	1489.0	0.001	-12.1
50	0.000404	0.000367	4264.4	4697.8	10561072	12817116	13944448	0.059	1482.2	0.001	-12.1
60	0.000396	0.000389	4425.2	4510.0	11165763	11597390	13933416	0.062	1481.1	0.001	-12.1
70	0.000390	0.000374	4360.1	4551.2	11169211	12169675	13891357	0.059	1476.6	0.001	-12.1
80	0.000398	0.000380	4326.9	4530.6	10876863	11924213	13806548	0.053	1467.6	0.001	-12.1
90	0.000390	0.000371	4319.9	4545.5	11066475	12251726	13816891	0.054	1468.7	0.001	-12.1
100	0.000399	0.000371	4272.8	4598.8	10700351	12395831	13816891	0.054	1468.7	0.001	-12.1
200	0.000392	0.000375	4280.6	4467.4	10923749	11898012	13636931	0.071	1449.5	0.002	-12.0
300	0.000390	0.000380	4310.3	4428.6	11041653	11655998	13625899	0.060	1448.4	0.001	-12.1
400	0.000392	0.000367	4171.5	4459.8	10645191	12167607	13445940	0.076	1429.3	0.002	-12.1
500	0.000386	0.000370	4245.9	4434.2	11002352	12000058	13530748	0.055	1438.2	0.001	-12.1
600	0.000374	0.000383	4369.2	4267.2	11682888	11143699	13466625	0.063	1431.5	0.001	-12.0
700	0.000374	0.000374	4300.6	4300.6	11499481	11499481	13414223	0.068	1425.9	0.001	-12.1
800	0.000374	0.000372	4275.0	4292.1	11431221	11522924	13361131	0.061	1420.2	0.001	-12.1
900	0.000370	0.000371	4271.8	4254.6	11560847	11467764	13297008	0.082	1413.5	0.002	-12.1
1000	0.000383	0.000353	4067.9	4411.2	10623127	12492361	13201857	0.085	1403.3	0.002	-12.0
2000	0.000361	0.000347	3997.1	4151.5	11085781	11958688	12703348	0.063	1350.3	0.002	-12.0
3000	0.000332	0.000334	3802.5	3785.6	11444321	11342275	11833889	0.053	1257.9	0.002	-12.0
4000	0.000297	0.000311	3736.1	3557.3	12600613	11423636	11367097	0.051	1208.3	0.002	-12.1
5000	0.000308	0.000298	3412.4	3531.8	11063717	11851816	10826529	0.036	1150.8	0.002	-12.1
6000	0.000274	0.000299	3492.7	3197.3	12739892	10676218	10412829	0.027	1106.8	0.001	-12.1
7000	0.000273	0.000273	3199.1	3199.1	11732532	11732532	9978444	0.018	1060.7	0.001	-12.1
8000	0.000255	0.000259	3031.7	2979.4	11899391	11492586	9373753	0.001	996.4	0.001	-12.1
9000	0.000240	0.000258	2993.9	2786.2	12480640	10809292	9002802	0.012	957.0	0.001	-12.1
10000	0.000235	0.000241	2809.2	2739.9	11933177	11351239	8652536	0.010	919.8	0.002	-12.1
20000	0.000168	0.000167	2084.9	2103.5	12383420	12605439	6531978	0.016	694.3	0.001	-12.1

Filename : P8455
Material : PlusRide , A-Str., Anchorage

Beam width (cm) : 5.057 Beam depth (cm) : 4.953 Bulk density (KN/m^3) : 23.15 Deflection (mm) : 0.1803

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000347	0.000356	4398.5	4288.1	12670252	12042118	15029721	0.103	1414.6	0.002	-12.2
13	0.000334	0.000340	4248.7	4174.2	12730239	12287580	14574651	0.080	1371.8	0.001	-12.2
20	0.000322	0.000352	4384.4	4012.8	13623141	11411915	14502254	0.048	1365.0	0.001	-12.2
30	0.000328	0.000343	4264.4	4078.9	13009486	11902839	14430546	0.123	1358.2	0.002	-12.2
40	0.000350	0.000338	4078.3	4221.9	11647724	12482708	14358838	0.072	1351.5	0.001	-12.2
50	0.000334	0.000344	4203.1	4075.8	12593718	11842163	14322984	0.072	1348.1	0.001	-12.2
60	0.000335	0.000332	4120.0	4157.0	12289648	12511667	14322984	0.077	1348.1	0.001	-12.2
70	0.000334	0.000332	4118.9	4137.3	12341361	12452370	14287130	0.072	1344.7	0.001	-12.2
80	0.000331	0.000328	4109.5	4146.9	12424101	12650946	14287130	0.068	1344.7	0.001	-12.2
90	0.000341	0.000331	4044.5	4172.1	11853884	12613024	14215422	0.072	1337.9	0.001	-12.2
100	0.000332	0.000338	4144.2	4071.2	12472366	12036602	14215422	0.069	1337.9	0.001	-12.1
200	0.000331	0.000340	4152.3	4043.0	12553727	11901460	14179568	0.075	1334.6	0.001	-12.1
300	0.000328	0.000326	4056.5	4075.1	12375146	12488914	14071316	0.067	1324.4	0.001	-12.1
400	0.000320	0.000343	4211.2	3936.6	13146007	11487070	14083727	0.079	1325.5	0.001	-12.1
500	0.000341	0.000319	3919.3	4194.0	11486381	13153592	14023741	0.075	1319.9	0.001	-12.1
600	0.000332	0.000334	4054.1	4036.0	12201392	12093141	13999608	0.074	1317.6	0.001	-12.1
700	0.000341	0.000320	3891.2	4144.6	11404330	12937778	13892046	0.063	1307.5	0.001	-12.1
800	0.000346	0.000331	3866.4	4040.6	11185069	12215872	13676233	0.087	1287.2	0.002	-12.1
900	0.000350	0.000320	3819.9	4175.3	10909959	13033619	13807927	0.085	1299.6	0.002	-12.1
1000	0.000331	0.000331	3968.9	3968.9	11998679	11998679	13736219	0.082	1292.9	0.002	-12.1
2000	0.000334	0.000328	3888.9	3959.6	11651861	12079351	13580392	0.090	1278.2	0.002	-12.0
3000	0.000340	0.000332	3856.9	3943.5	11353307	11868364	13496963	0.095	1270.3	0.002	-12.0
4000	0.000350	0.000325	3735.3	4026.6	10667944	12396521	13412844	0.087	1262.4	0.002	-12.0
5000	0.000298	0.000358	4232.6	3527.1	14203700	9863987	13317003	0.033	1253.4	0.001	-12.0
6000	0.000337	0.000325	3745.7	3883.2	11123704	11955241	13197030	0.096	1242.1	0.002	-12.0
7000	0.000353	0.000332	3697.2	3929.3	10470058	11826304	13185309	0.103	1241.0	0.002	-12.0
8000	0.000344	0.000338	3766.5	3832.9	10943055	11332622	13149455	0.112	1237.6	0.002	-12.1
9000	0.000356	0.000341	3699.5	3861.1	10389386	11316074	13077747	0.102	1230.9	0.002	-12.1
10000	0.000365	0.000346	3658.1	3863.1	10021193	11175416	13005349	0.105	1224.1	0.002	-12.1
20000	0.000390	0.000331	3253.6	3839.9	8334676	11609112	12191050	0.130	1147.4	0.002	-12.1
30000	0.000358	0.000341	2954.9	3096.9	8263658	9076578	10466610	0.170	985.1	0.003	-12.1
40000	0.000223	0.000365	2715.4	1662.5	12149680	4554216	7137704	0.199	671.8	0.005	-12.1

Filename : P10465
Material : PlusRide , A-Str., Anchorage
Beam width (cm) : 5.088 Beam depth (cm) : 4.966 Bulk density (KN/m^3) : 23.16 Deflection (mm) : 0.2184

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000539	0.000428	4352.7	5490.2	8069908	12839180	13838955	0.088	1599.4	0.002	-12.0
10	0.000547	0.000426	4204.2	5394.9	7688615	12660599	13468004	0.052	1556.6	0.001	-12.0
20	0.000521	0.000428	4287.9	5229.2	8222288	12228972	13429392	0.054	1552.1	0.001	-12.0
30	0.000538	0.000419	4177.7	5367.1	7767218	12819184	13390090	0.047	1547.6	0.001	-12.0
40	0.000535	0.000420	4154.8	5289.2	7767218	12588202	13263222	0.064	1532.9	0.001	-12.0
50	0.000527	0.000422	4190.2	5241.5	7944419	12430996	13272875	0.074	1534.0	0.001	-12.0
60	0.000529	0.000419	4153.5	5247.3	7852716	12533042	13214957	0.053	1527.3	0.001	-12.0
70	0.000523	0.000419	4180.6	5222.0	7994063	12472366	13234263	0.059	1529.6	0.001	-12.0
80	0.000520	0.000404	4115.6	5300.1	7914771	13126012	13204615	0.057	1526.2	0.001	-12.0
90	0.000516	0.000419	4173.3	5138.6	8095420	12273790	13126701	0.054	1517.1	0.001	-12.0
100	0.000520	0.000423	4177.1	5133.1	8032675	12130374	13126701	0.060	1517.1	0.001	-12.0
200	0.000519	0.000405	4066.4	5202.6	7842373	12837801	13009486	0.059	1503.6	0.001	-12.1
300	0.000514	0.000408	4070.6	5125.4	7918908	12554416	12931573	0.064	1494.6	0.001	-12.0
400	0.000513	0.000413	4080.2	5067.1	7960967	12277237	12883308	0.053	1489.0	0.001	-12.0
500	0.000511	0.000416	4055.2	4985.5	7934766	11993163	12746787	0.063	1473.2	0.001	-12.0
600	0.000498	0.000425	4154.0	4868.1	8347087	11464317	12775746	0.054	1476.6	0.001	-12.0
700	0.000505	0.000407	4031.0	5005.4	7980273	12305507	12726791	0.064	1470.9	0.001	-12.0
800	0.000516	0.000416	4042.5	5013.4	7841684	12060045	12756440	0.060	1474.3	0.001	-12.0
900	0.000510	0.000420	4061.4	4925.6	7970620	11722879	12688179	0.067	1466.4	0.001	-12.0
1000	0.000504	0.000410	4027.8	4950.5	7997511	12082109	12658531	0.063	1463.0	0.001	-12.1
2000	0.000504	0.000416	3960.4	4797.8	7863748	11541541	12366183	0.070	1429.3	0.001	-12.1
3000	0.000505	0.000408	3858.1	4773.3	7638281	11691852	12161401	0.070	1405.6	0.001	-12.0
4000	0.000496	0.000416	3848.9	4593.8	7757565	11050617	11937314	0.087	1379.6	0.001	-11.9
5000	0.000501	0.000402	3693.8	4596.7	7378340	11426394	11673925	0.087	1349.2	0.001	-11.9
6000	0.000490	0.000405	3685.0	4457.2	7517619	10998215	11498102	0.077	1328.9	0.001	-12.0
7000	0.000469	0.000393	3610.4	4307.9	7692752	10952018	11196101	0.078	1294.0	0.001	-12.1
8000	0.000471	0.000377	3432.1	4286.7	7289394	11371924	10864452	0.080	1255.7	0.001	-12.0
8544	0.000462	0.000384	3454.7	4151.0	7479696	10798260	10747237	0.076	1242.1	0.001	-11.9
9000	0.000456	0.000381	3422.1	4090.4	7505897	10723794	10620369	0.072	1227.5	0.001	-12.0
10000	0.000437	0.000371	3354.9	3947.7	7685167	10641054	10337674	0.066	1194.8	0.001	-12.1
10048	0.000440	0.000372	3347.5	3950.0	7615528	10604510	10328021	0.072	1193.7	0.001	-12.0
17952	0.000268	0.000256	2355.5	2465.1	8782851	9619215	6865765	0.011	793.5	0.001	-11.9
19280	0.000253	0.000234	2168.8	2348.4	8562901	10039120	6426898	0.012	742.8	0.001	-12.0
20000	0.000246	0.000229	2110.4	2261.1	8584275	9854334	6222117	0.009	719.1	0.001	-12.0

Filename : P9450
Material : PlusRide , A-Str., Anchorage
Beam width (cm) : 5.004 Beam depth (cm) : 5.014 Bulk density (KN/m^3) : 23.18 Deflection (mm) : 0.1676

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000341	0.000365	4273.5	3994.4	12524768	10942365	15186927	0.064	1363.8	0.002	-12.2
13	0.000334	0.000350	4164.2	3969.3	12477192	11336070	14948360	0.039	1342.4	0.001	-12.2
20	0.000338	0.000340	4032.3	4014.7	11922145	11618030	14798049	0.043	1328.9	0.001	-12.2
30	0.000338	0.000344	4024.5	3954.8	11899391	11490516	14672560	0.043	1317.6	0.001	-12.2
40	0.000340	0.000341	3994.7	3977.2	11759423	11656687	14659460	0.047	1316.5	0.001	-12.2
50	0.000355	0.000340	3892.2	4062.9	10976151	11960067	14622227	0.048	1313.2	0.001	-12.2
60	0.000343	0.000331	3893.1	4033.4	11360202	12193808	14571893	0.032	1308.6	0.001	-12.2
70	0.000358	0.000334	3830.0	4103.6	10710693	12295164	14571893	0.061	1308.6	0.001	-12.2
80	0.000349	0.000343	3921.4	3989.6	11247124	11642208	14547071	0.045	1306.4	0.001	-12.2
90	0.000349	0.000335	3885.9	4041.3	11145768	12055218	14571893	0.059	1308.6	0.001	-12.2
100	0.000350	0.000343	3899.7	3984.4	11137494	11627039	14496738	0.061	1301.8	0.001	-12.2
200	0.000343	0.000346	3934.7	3900.8	11481554	11285047	14408482	0.049	1294.0	0.001	-12.1
300	0.000358	0.000340	3783.1	3982.3	10579688	11722190	14270582	0.052	1281.6	0.001	-12.1
400	0.000350	0.000344	3823.4	3889.7	10919612	11300905	14183015	0.057	1273.7	0.001	-12.2
500	0.000359	0.000343	3761.6	3941.5	10475574	11501550	14157504	0.042	1271.4	0.001	-12.1
600	0.000344	0.000347	3859.3	3826.1	11212649	11020968	14132682	0.059	1269.2	0.001	-12.2
700	0.000353	0.000344	3787.2	3885.6	10725173	11289184	14107170	0.055	1266.9	0.001	-12.2
800	0.000358	0.000343	3735.8	3898.2	10447304	11375371	14032015	0.050	1260.2	0.001	-12.1
900	0.000358	0.000334	3671.7	3933.9	10268034	11787003	13969270	0.057	1254.5	0.001	-12.1
1000	0.000361	0.000343	3697.4	3890.3	10254244	11352618	13944448	0.052	1252.3	0.001	-12.2
2000	0.000359	0.000337	3630.4	3871.4	10110139	11496723	13781037	0.066	1237.6	0.001	-12.1
3000	0.000370	0.000343	3542.0	3819.2	9585429	11145078	13517648	0.070	1214.0	0.001	-12.2
4000	0.000375	0.000335	3472.0	3888.7	9246885	11599459	13492826	0.074	1211.7	0.001	-12.1
5000	0.000368	0.000343	3522.5	3782.9	9571639	11038895	13416981	0.068	1204.9	0.001	-12.1
6000	0.000374	0.000335	3423.6	3819.1	9154492	11392609	13279081	0.080	1192.5	0.001	-12.1
7000	0.000377	0.000338	3441.2	3835.3	9128980	11339517	13341825	0.081	1198.2	0.001	-12.1
8000	0.000384	0.000340	3400.6	3848.1	8846285	11327796	13279081	0.087	1192.5	0.001	-12.1
9000	0.000380	0.000347	3451.6	3777.4	9084163	10881000	13266670	0.080	1191.4	0.001	-12.1
10000	0.000384	0.000346	3425.4	3809.3	8911098	11020279	13266670	0.092	1191.4	0.001	-12.1
20000	0.000396	0.000344	3251.9	3744.8	8205050	10879621	12801947	0.093	1149.7	0.001	-12.2
23015	0.000404	0.000338	3160.7	3773.3	7827894	11156110	12651636	0.110	1136.2	0.002	-12.2
23649	0.000405	0.000344	3177.5	3741.5	7840305	10870657	12639225	0.106	1135.1	0.002	-12.1
25013	0.000404	0.000347	3189.2	3709.4	7898223	10685182	12613713	0.105	1132.8	0.002	-12.1
28570	0.000404	0.000340	3116.7	3704.5	7718953	10905132	12450991	0.130	1118.2	0.002	-12.1
30000	0.000413	0.000337	3064.3	3755.9	7424536	11154042	12413069	0.130	1114.8	0.002	-12.1
40000	0.000419	0.000355	3038.1	3586.9	7256298	10114965	12099346	0.175	1086.6	0.002	-12.2
43832	0.000454	0.000346	2818.0	3704.6	6201018	10717588	11773213	0.166	1057.3	0.002	-12.1
50000	0.000471	0.000349	2726.3	3681.7	5790490	10559693	11522235	0.206	1034.7	0.002	-12.2
60000	0.000554	0.000378	2403.3	3519.8	4336059	9300666	10505222	0.292	943.4	0.003	-12.1
70000	0.000679	0.000401	1942.4	3292.7	2858943	8215393	8986943	0.434	807.1	0.004	-12.1
80000	0.000776	0.000374	1380.4	2865.4	1778358	7662414	6852941	0.531	615.4	0.005	-12.1
81131	0.000788	0.000381	1382.5	2856.8	1754019	7490039	6852941	0.533	615.4	0.005	-12.1

Filename : P27467

Material : PlusRide Asphalt, A Street, Anchorage

Rep	Tens strn	Comp strn	Tens strs	Comp strs
1	477	444	682	732
11	474	448	629	684
23	460	469	645	632
30	472	441	610	653
40	481	443	592	644
50	478	453	592	625
60	486	456	588	626
70	486	443	575	631
80	493	451	576	629
90	490	451	574	623
100	517	440	549	646
200	519	453	534	611
300	535	448	517	617
400	539	460	513	601
500	559	456	495	607
600	553	465	494	587
700	557	462	489	590
800	569	463	482	591
900	574	463	472	584
1000	577	459	469	590
2000	623	472	431	569
3000	647	469	410	565
4000	673	466	390	563
5000	721	478	372	561
6000	736	492	366	547
7000	755	487	346	536
8000	803	475	326	551
9000	836	489	312	533
10000	887	483	290	533
20000	1241	450	176	486
30000	1427	414	136	470
40000	1511	408	116	430
50000	1521	390	109	427

Beam width (in) : 1.945 Bulk density (lb/ft^3) : 145.4

Beam depth (in) : 2.031 Deflection (in) : 0.0086

Tens stiff	Comp stiff	Flex stiff	Disp engy	Max load	Phase lag	Temp
1430000	1648900	1937000	0.06376	378	0.004	9.6
1326800	1481000	1772000	0.05135	345	0.003	9.6
1400000	1347200	1751200	0.05330	341	0.003	9.6
1291300	1481000	1730400	0.05428	337	0.003	9.6
1230600	1455400	1692800	0.05483	330	0.003	9.6
1237700	1380000	1668100	0.05607	325	0.003	9.6
1209700	1373000	1662900	0.05744	324	0.003	9.6
1184000	1426600	1651200	0.05792	322	0.003	9.6
1167000	1392600	1648600	0.05996	321	0.003	9.6
1171000	1380600	1639500	0.05956	320	0.003	9.6
1061700	1469000	1627800	0.05963	317	0.003	9.5
1030100	1349900	1564200	0.06253	305	0.003	9.6
966810	1375300	1543400	0.06869	301	0.003	9.5
951240	1305500	1518700	0.06827	296	0.003	9.6
885790	1330300	1495300	0.06922	292	0.003	9.6
893460	1263300	1471900	0.07169	287	0.003	9.6
878140	1278200	1468000	0.07207	286	0.003	9.6
846020	1276400	1456300	0.07208	284	0.003	9.7
822320	1260200	1431600	0.07211	279	0.004	9.5
814150	1285400	1434200	0.07387	280	0.003	9.6
692570	1204200	1345900	0.08260	262	0.004	9.6
634460	1204400	1304300	0.08703	254	0.004	9.5
578390	1206200	1262800	0.09218	246	0.004	9.7
515520	1172000	1226400	0.09882	239	0.004	9.6
496880	1113500	1203000	0.10229	235	0.004	9.6
457860	1100700	1153600	0.10624	225	0.005	9.5
405970	1159000	1123700	0.11216	219	0.005	9.6
373030	1091300	1079600	0.11919	210	0.005	9.5
327130	1103200	1030200	0.12400	201	0.005	9.6
141930	1079800	709330	0.15702	138	0.007	9.5
95454	1133500	579410	0.15831	113	0.007	9.5
76842	1052400	501460	0.15688	98	0.008	9.5
71977	1093100	478080	0.13781	93	0.007	9.4

Filename : P11465
Material : PlusRide , A-Str., Anchorage
Beam width (cm) : 5.138 Beam depth (cm) : 5.009 Bulk density (KN/m^3) : 23.04 Deflection (mm) : 0.2083

Rep	Tens strn (m/m)	Comp str (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000419	0.000420	5597.6	5577.8	13369405	13274944	16557653	0.119	1891.4	0	-28.7
13	0.000399	0.000411	5529.1	5368.9	13846539	13055683	16143264	0.128	1844.0	0	-28.7
20	0.000398	0.000404	5408.1	5328.2	13594182	13196341	15906076	0.150	1817.0	0	-28.7
30	0.000399	0.000405	5374.4	5295.4	13459040	13066025	15807477	0.129	1805.7	0	-28.7
40	0.000389	0.000398	5368.9	5248.3	13806548	13192893	15728874	0.135	1796.7	0	-28.7
50	0.000387	0.000390	5301.6	5261.2	13685196	13477657	15649582	0.134	1787.7	0	-28.7
60	0.000383	0.000381	5264.4	5284.9	13747941	13855503	15630276	0.134	1785.4	0	-28.7
70	0.000383	0.000395	5343.2	5181.9	13954101	13123943	15590285	0.133	1780.9	0	-28.7
80	0.000374	0.000390	5363.0	5137.9	14340221	13161176	15550983	0.145	1776.4	0	-28.7
90	0.000381	0.000393	5309.7	5148.8	13920316	13089468	15491686	0.145	1769.6	0	-28.7
100	0.000381	0.000396	5303.0	5103.6	13903078	12877102	15413083	0.141	1760.6	0	-28.7
200	0.000390	0.000380	5033.4	5171.5	12893650	13611420	15116598	0.131	1726.8	0	-28.6
300	0.000368	0.000381	5133.4	4953.0	13948585	12985354	14939397	0.122	1706.5	0	-28.7
400	0.000367	0.000371	4991.9	4931.7	13619004	13292871	14702209	0.126	1679.5	0	-28.7
500	0.000358	0.000368	4979.9	4838.8	13926521	13148076	14544313	0.130	1661.4	0	-28.7
600	0.000353	0.000384	5077.1	4663.8	14378144	12132442	14406413	0.121	1645.7	0	-28.7
700	0.000353	0.000368	4937.1	4737.2	13981681	12872276	14327810	0.131	1638.6	0	-28.7
800	0.000347	0.000380	5049.4	4613.8	14545003	12143474	14287819	0.122	1632.1	0	-28.6
900	0.000358	0.000364	4835.1	4755.8	13521095	13081884	14209216	0.121	1623.1	0	-28.6
1000	0.000359	0.000378	4910.8	4659.4	13676233	12311712	14169915	0.107	1618.6	0	-28.7
2000	0.000364	0.000356	4673.5	4771.3	12855038	13398364	13992024	0.110	1598.3	0	-28.8
3000	0.000359	0.000365	4714.0	4637.1	13128080	12702659	13854124	0.119	1582.5	0	-28.8
4000	0.000358	0.000365	4724.0	4627.6	13210820	12677147	13854124	0.104	1582.5	0	-28.8
5000	0.000355	0.000367	4747.1	4592.7	13386643	12530284	13834128	0.101	1580.3	0	-28.8
6000	0.000356	0.000368	4726.5	4573.3	13272875	12426859	13774831	0.101	1573.5	0	-28.7
7000	0.000361	0.000358	4655.9	4694.7	12912956	13128770	13854124	0.107	1582.5	0	-28.7
8000	0.000365	0.000368	4694.3	4656.3	12859865	12652325	13854124	0.109	1582.5	0	-28.8
9000	0.000364	0.000356	4620.8	4717.4	12710243	13247364	13834128	0.103	1580.3	0	-28.8
10000	0.000371	0.000362	4619.0	4733.0	12450302	13072231	13854124	0.131	1582.5	0	-28.7
20000	0.000372	0.000377	4689.9	4634.3	12590960	12293785	13814133	0.121	1578.0	0	-28.8
30000	0.000384	0.000378	4632.4	4705.4	12050392	12433064	13834128	0.110	1580.3	0	-28.8
40000	0.000416	0.000383	4458.9	4840.6	10726552	12641293	13755525	0.099	1571.3	0	-28.8
50000	0.000456	0.000393	4267.6	4946.5	9359963	12575101	13577634	0.068	1551.0	0	-28.8
60000	0.000504	0.000396	4064.3	5164.4	8070598	13030171	13479036	0.045	1539.7	0	-28.8
70000	0.000542	0.000413	3975.8	5224.5	7330764	12658531	13380437	0.036	1528.4	0	-28.8
80000	0.000556	0.000422	3959.0	5218.0	7123225	12375146	13340446	0.019	1523.9	0	-28.8
90000	0.000578	0.000417	3864.0	5354.5	6684013	12834353	13301145	0.015	1519.4	0	-28.8
100000	0.000609	0.000428	3808.0	5426.7	6248801	12690248	13261843	0.008	1514.9	0	-28.8
147240	0.000668	0.000441	3605.6	5457.2	5401681	12373767	12867449	0.040	1469.8	0	-28.8
168610	0.000583	0.000390	3297.8	4921.6	5660795	12607508	11702884	0.029	1336.8	0	-28.8
188700	0.000399	0.000304	2750.6	3613.5	6888243	11888359	9255848	0.019	1057.3	0	-28.8
200000	0.000358	0.000246	2461.2	3580.0	6882865	14562240	8643572	0.025	987.4	0	-28.8
259750	0.000255	0.000188	2139.9	2904.2	8398800	15469622	7301805	0.009	834.1	0	-28.8

Filename : P14470
Material : PlusRide , A-Str., Anchorage

Beam width (cm) : 5.121 Beam depth (cm) : 4.925 Bulk density (KN/m^3) : 22.97 Deflection (mm) : 0.2311

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000396	0.000477	6540.5	5436.8	16502493	11402951	16124647	0.128	1936.5	0	-28.6
13	0.000378	0.000457	6313.0	5223.2	16681074	11418810	15524093	0.144	1864.3	0	-28.6
20	0.000387	0.000453	6207.8	5309.3	16024670	11721500	15542709	0.153	1866.6	0	-28.6
30	0.000375	0.000457	6325.1	5191.9	16845864	11350549	15486170	0.150	1859.8	0	-28.6
40	0.000381	0.000447	6147.8	5246.1	16117752	11736669	15373782	0.154	1846.3	0	-28.6
50	0.000365	0.000451	6339.1	5125.7	17365747	11353997	15392398	0.152	1848.5	0	-28.6
60	0.000367	0.000448	6263.4	5118.9	17088568	11413983	15298626	0.165	1837.3	0	-28.6
70	0.000378	0.000437	6043.8	5239.4	15970199	12001437	15242777	0.151	1830.5	0	-28.6
80	0.000362	0.000457	6352.1	5027.8	17544328	10992009	15242777	0.154	1830.5	0	-28.6
90	0.000377	0.000434	6027.0	5240.0	15988816	12085556	15223471	0.161	1828.2	0	-28.6
100	0.000375	0.000434	6024.9	5217.4	16046044	12033154	15186238	0.156	1823.7	0	-28.6
200	0.000352	0.000437	6159.0	4960.9	17515369	11363650	14923538	0.157	1792.2	0	-28.6
300	0.000347	0.000432	6074.5	4880.6	17497442	11295389	14698072	0.158	1765.1	0	-28.6
400	0.000344	0.000417	5864.2	4837.9	17038235	11596701	14397450	0.150	1729.0	0	-28.7
500	0.000331	0.000422	5959.5	4674.9	18017325	11087160	14228522	0.137	1708.8	0	-28.7
600	0.000331	0.000419	5865.4	4633.9	17732561	11067854	14059595	0.148	1688.5	0	-28.6
700	0.000326	0.000410	5761.4	4588.2	17656716	11198170	13872051	0.144	1665.9	0	-28.6
800	0.000320	0.000396	5667.8	4581.1	17693260	11558778	13759662	0.145	1652.4	0	-28.6
900	0.000322	0.000404	5672.9	4521.6	17627068	11198170	13665890	0.128	1641.1	0	-28.7
1000	0.000331	0.000387	5432.9	4638.9	16425269	11974547	13590735	0.132	1632.1	0	-28.6
2000	0.000299	0.000370	5226.9	4236.3	17453314	11464317	12708175	0.127	1526.2	0	-28.6
3000	0.000279	0.000362	5118.2	3938.7	18369659	10878242	12089004	0.124	1451.8	0	-28.7
4000	0.000277	0.000359	4919.4	3796.7	17751178	10573483	11638071	0.124	1397.7	0	-28.7
5000	0.000277	0.000344	4672.4	3762.2	16859654	10930644	11319522	0.114	1359.3	0	-28.6
6000	0.000264	0.000331	4589.0	3658.8	17400912	11061649	11056133	0.104	1327.8	0	-28.7
7000	0.000262	0.000317	4415.4	3648.4	16837590	11496034	10849972	0.109	1303.0	0	-28.6
8000	0.000240	0.000328	4637.5	3393.8	19332201	10353532	10643122	0.109	1278.2	0	-28.7
9000	0.000249	0.000313	4345.9	3456.0	17465725	11045790	10455578	0.093	1255.7	0	-28.7
10000	0.000252	0.000298	4143.0	3500.8	16453539	11748391	10305267	0.105	1237.6	0	-28.6
13408	0.000225	0.000289	4130.0	3214.6	18356559	11120946	9817791	0.093	1179.0	0	-28.7
17502	0.000222	0.000264	3765.8	3170.1	16963079	12020743	9348241	0.087	1122.6	0	-28.6
20000	0.000213	0.000268	3786.3	3007.9	17770484	11215407	9104158	0.067	1093.3	0	-28.6
30000	0.000182	0.000250	3729.9	2708.6	20519520	10821013	8522220	0.063	1023.5	0	-28.7
40000	0.000179	0.000223	3343.9	2675.1	18702688	11969720	8071977	0.058	969.3	0	-28.7
50000	0.000174	0.000218	3216.4	2577.6	18451020	11849058	7771355	0.057	933.3	0	-28.7
60000	0.000155	0.000215	3321.5	2398.8	21434487	11180243	7565194	0.052	908.5	0	-28.8
70000	0.000156	0.000203	3125.6	2413.1	19978263	11908355	7396267	0.049	888.2	0	-28.7
78116	0.000140	0.000200	3269.5	2293.5	23343712	11487070	7321111	0.054	879.2	0	-28.8

Filename : P16473
Material : PlusRide , A-Str., Anchorage
Beam width (cm) : 4.770 Beam depth (cm) : 4.981 Bulk density (KN/m^3) : 23.05 Deflection (mm) : 0.2413

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000481	0.000507	6649.1	6316.6	13816201	12468918	16663147	0.099	2013.1	0	-28.6
13	0.000487	0.000505	6649.1	6413.8	13647274	12697832	16794152	0.102	2028.9	0	-28.6
20	0.000471	0.000502	6716.4	6297.8	14265068	12542695	16719686	0.081	2019.9	0	-28.6
30	0.000448	0.000487	6781.1	6241.9	15120046	12811600	16719686	0.075	2019.9	0	-28.6
40	0.000480	0.000490	6563.6	6424.0	13681059	13104637	16701069	0.098	2017.6	0	-28.6
50	0.000480	0.000508	6669.7	6298.1	13901699	12395831	16663147	0.083	2013.1	0	-28.6
60	0.000480	0.000490	6556.3	6416.8	13665890	13090158	16681763	0.081	2015.4	0	-28.6
70	0.000480	0.000495	6571.8	6373.9	13697607	12885376	16644530	0.085	2010.8	0	-28.6
80	0.000481	0.000504	6636.4	6341.9	13790000	12593028	16681763	0.074	2015.4	0	-28.6
90	0.000489	0.000492	6483.8	6444.5	13267359	13106706	16625914	0.087	2008.6	0	-28.6
100	0.000471	0.000513	6758.0	6207.9	14353322	12111757	16644530	0.108	2010.8	0	-28.8
200	0.000484	0.000496	6543.6	6386.4	13513511	12871586	16625914	0.100	2008.6	0	-28.7
300	0.000486	0.000498	6536.0	6379.5	13456282	12819184	16607297	0.089	2006.3	0	-28.7
400	0.000454	0.000490	6695.7	6207.3	14733926	12662668	16570064	0.094	2001.8	0	-28.6
500	0.000477	0.000484	6492.6	6392.8	13617625	13201857	16570064	0.099	2001.8	0	-28.6
600	0.000453	0.000493	6728.4	6179.6	14854588	12530284	16570064	0.108	2001.8	0	-28.7
700	0.000471	0.000498	6633.3	6275.8	14088554	12610955	16588681	0.112	2004.1	0	-28.7
800	0.000457	0.000501	6754.2	6171.2	14765643	12326881	16588681	0.110	2004.1	0	-28.6
900	0.000475	0.000486	6505.6	6365.9	13687265	13106016	16551448	0.098	1999.6	0	-28.7
1000	0.000480	0.000493	6532.3	6354.7	13615557	12885376	16570064	0.118	2001.8	0	-28.7
1415	0.000441	0.000495	6810.9	6072.4	15443421	12275858	16514215	0.148	1995.1	0	-28.7
2000	0.000472	0.000493	6569.7	6291.8	13909284	12757819	16532831	0.105	1997.3	0	-28.7
3000	0.000463	0.000487	6570.8	6249.3	14180257	12826769	16476982	0.086	1990.6	0	-28.7
4000	0.000469	0.000501	6619.5	6205.6	14103723	12395831	16476982	0.060	1990.6	0	-28.6
5000	0.000477	0.000495	6511.4	6276.0	13656927	12687490	16439749	0.072	1986.0	0	-28.6
6000	0.000456	0.000490	6609.1	6147.1	14496048	12539937	16383210	0.089	1979.3	0	-28.6
7000	0.000454	0.000496	6624.2	6067.2	14576720	12228283	16290127	0.075	1968.0	0	-28.7
8000	0.000459	0.000481	6487.7	6186.4	14137508	12855038	16290127	0.072	1968.0	0	-28.7
9000	0.000463	0.000489	6484.2	6148.1	13993403	12580617	16234278	0.074	1961.2	0	-28.6
10000	0.000440	0.000477	6548.9	6037.3	14899406	12662668	16159812	0.102	1952.2	0	-28.6
20000	0.000387	0.000426	5774.1	5249.2	14904922	12318607	14144403	0.046	1708.8	0	-28.8
30000	0.000305	0.000356	5036.0	4319.6	16487324	12130374	11960757	0.052	1445.0	0	-28.7
40000	0.000288	0.000328	4672.9	4099.4	16250136	12506151	11233334	0.064	1357.1	0	-28.7
50000	0.000274	0.000298	4330.2	3983.8	15795066	13368716	10673460	0.075	1289.5	0	-28.7
60000	0.000243	0.000289	4385.5	3684.7	18057316	12747476	10300441	0.081	1244.4	0	-28.7
70000	0.000267	0.000270	3873.8	3831.1	14525007	14205769	9908805	0.055	1197.1	0	-28.7
80000	0.000270	0.000249	3577.8	3877.7	13266670	15584079	9572329	0.093	1156.5	0	-28.7
90000	0.000215	0.000235	3818.9	3480.6	17799443	14784949	9367547	0.051	1131.7	0	-28.6
100000	0.000200	0.000232	3838.9	3297.5	19227397	14186463	9124843	0.049	1102.4	0	-28.7
131330	0.000191	0.000194	3377.9	3325.9	17711876	17171308	8620819	0.057	1041.5	0	-28.7
133460	0.000186	0.000185	3309.4	3336.1	17769105	18057316	8546353	0.043	1032.5	0	-28.7
141850	0.000153	0.000195	3749.6	2948.2	24433122	15104877	8490503	0.046	1025.7	0	-28.7

Filename : P17467
Material : PlusRide , A-Str., Anchorage
Beam width (cm) : 5.207 Beam depth (cm) : 5.050 Bulk density (KN/m^3) : 23.06 Deflection (mm) : 0.2146

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000420	0.000519	6725.2	5449.7	16006053	10510738	17173377	0.042	2098.8	0.001	-29.1
13	0.000378	0.000466	6091.9	4943.6	16097067	10600373	15568221	0.097	1902.6	0	-29.1
20	0.000380	0.000463	6064.5	4972.5	15961925	10730689	15586837	0.085	1904.9	0	-29.1
30	0.000378	0.000469	6077.2	4900.3	16058455	10441099	15476517	0.074	1891.4	0	-29.1
40	0.000367	0.000468	6116.7	4792.0	16687969	10242523	15328964	0.069	1873.3	0	-29.1
50	0.000353	0.000472	6235.6	4661.9	17658785	9870193	15217955	0.080	1859.8	0	-29.1
60	0.000358	0.000450	5973.1	4746.9	16703827	10549350	15089018	0.067	1844.0	0	-29.1
70	0.000353	0.000471	6141.3	4606.0	17391948	9782626	15015242	0.088	1835.0	0	-29.1
80	0.000367	0.000457	5894.9	4723.6	16082588	10326642	14960082	0.073	1828.2	0	-29.1
90	0.000365	0.000451	5858.1	4736.8	16048113	10492122	14941465	0.075	1826.0	0	-29.1
100	0.000364	0.000446	5806.9	4738.7	15972957	10636917	14886305	0.079	1819.2	0	-29.1
200	0.000350	0.000456	5932.7	4556.1	16943773	9992924	14701519	0.088	1796.7	0	-29.0
300	0.000350	0.000440	5775.6	4600.9	16494909	10467300	14609126	0.097	1785.4	0	-29.1
400	0.000353	0.000446	5769.7	4573.3	16339082	10265966	14553966	0.086	1778.7	0	-29.2
500	0.000347	0.000441	5762.8	4536.2	16599713	10285272	14480190	0.094	1769.6	0	-29.1
600	0.000349	0.000434	5680.2	4567.6	16292196	10534871	14443646	0.084	1765.1	0	-29.3
700	0.000356	0.000437	5628.4	4591.0	15805409	10516254	14425030	0.081	1762.9	0	-29.2
800	0.000362	0.000420	5455.9	4701.4	15069023	11189206	14406413	0.099	1760.6	0	-29.1
900	0.000337	0.000447	5854.9	4410.7	17387122	9867435	14351253	0.086	1753.8	0	-29.1
1000	0.000343	0.000432	5680.1	4504.9	16574891	10425930	14332637	0.090	1751.6	0	-29.1
2000	0.000337	0.000437	5702.7	4398.7	16935499	10075664	14166467	0.079	1731.3	0	-29.1
3000	0.000328	0.000426	5644.6	4342.0	17220263	10189431	14000298	0.086	1711.0	0	-29.2
4000	0.000326	0.000432	5643.8	4262.1	17296797	9863987	13852745	0.077	1693.0	0	-29.1
5000	0.000326	0.000431	5587.8	4234.3	17124422	9833649	13742425	0.082	1679.5	0	-29.2
6000	0.000323	0.000419	5476.3	4229.0	16937568	10101175	13613488	0.074	1663.7	0	-29.2
7000	0.000326	0.000417	5400.4	4223.9	16550069	10124618	13521095	0.094	1652.4	0	-29.1
8000	0.000310	0.000416	5534.1	4125.8	17856671	9924663	13483862	0.083	1647.9	0	-29.1
9000	0.000319	0.000419	5437.3	4140.9	17052714	9890188	13410086	0.099	1638.9	0	-29.1
10000	0.000307	0.000407	5443.4	4107.5	17734630	10097728	13354926	0.088	1632.1	0	-29.1
20000	0.000276	0.000355	4857.3	3775.6	17621552	10647259	12119342	0.076	1481.1	0	-29.1
30000	0.000206	0.000256	3348.5	2686.6	16285301	10483158	8503604	0.056	1039.3	0	-29.1
40000	0.000192	0.000237	3096.9	2512.5	16112236	10605889	7913392	0.047	967.1	0	-29.1
50000	0.000176	0.000215	2936.3	2406.1	16701069	11214718	7544509	0.047	922.0	0	-29.1
60000	0.000168	0.000206	2858.5	2340.6	16978248	11383645	7341796	0.039	897.2	0	-29.0
70000	0.000161	0.000192	2738.9	2293.0	17020308	11930419	7120467	0.042	870.2	0	-29.1

Filename : P25470
Material : PlusRide , A-Str., Anchorage
Beam width (cm) : 4.890 Beam depth (cm) : 5.113 Bulk density (KN/m³) : 22.86 Deflection (mm) : 0.2057

Rep	Tens strn (m/m)	Comp strn (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m³)	Max load (N)	Lag (sec)	Temp (C)
1	0.000454	0.000398	5278.0	6029.2	11614628	15155900	16541105	0.101	1889.1	0	-29.1
13	0.000422	0.000368	5270.7	6038.8	12499946	16408721	16541105	0.125	1889.1	0	-29.1
20	0.000426	0.000402	5425.5	5747.0	12732307	14285751	16402516	0.115	1873.3	0	-29.1
30	0.000420	0.000341	4984.1	6137.6	11862158	17988366	16166017	0.121	1846.3	0	-29.1
40	0.000425	0.000370	5100.0	5860.9	12010401	15861258	16028117	0.130	1830.5	0	-29.1
50	0.000420	0.000358	5016.8	5894.7	11940072	16484566	15928829	0.142	1819.2	0	-29.1
60	0.000426	0.000350	4912.7	5978.8	11528440	17075468	15850226	0.138	1810.2	0	-29.1
70	0.000416	0.000356	5013.1	5852.2	12059355	16434233	15870222	0.133	1812.4	0	-29.1
80	0.000417	0.000352	4951.2	5874.3	11868364	16705896	15790929	0.137	1803.5	0	-29.1
90	0.000426	0.000349	4884.9	5970.4	11463627	17124422	15790929	0.128	1803.5	0	-29.1
100	0.000419	0.000353	4934.1	5850.2	11784934	16567306	15731632	0.129	1796.7	0	-29.1
200	0.000411	0.000350	4949.4	5813.0	12035912	16601781	15712326	0.106	1794.4	0	-29.1
300	0.000410	0.000356	4959.0	5705.9	12102794	16023291	15593732	0.129	1780.9	0	-29.1
400	0.000404	0.000356	4974.0	5640.0	12318607	15838505	15534435	0.127	1774.1	0	-29.1
500	0.000408	0.000343	4855.5	5784.4	11893186	16878960	15514440	0.123	1771.9	0	-29.1
600	0.000411	0.000349	4846.6	5716.6	11785624	16396310	15415841	0.122	1760.6	0	-29.0
700	0.000413	0.000337	4762.9	5837.7	11540162	17336099	15415841	0.133	1760.6	0	-29.1
800	0.000413	0.000340	4781.8	5809.5	11586358	17100979	15415841	0.118	1760.6	0	-29.1
900	0.000393	0.000350	4957.6	5569.4	12604060	15906076	15415841	0.119	1760.6	0	-29.1
1000	0.000425	0.000343	4733.6	5865.5	11147147	17116148	15395846	0.119	1758.4	0	-29.1
2000	0.000404	0.000353	4853.7	5550.1	12020743	15717153	15218644	0.122	1738.1	0	-29.1
3000	0.000401	0.000353	4851.7	5506.8	12104862	15594422	15159347	0.131	1731.3	0	-29.1
4000	0.000411	0.000359	4818.8	5518.6	11718053	15368955	15120046	0.136	1726.8	0	-29.0
5000	0.000413	0.000352	4758.0	5584.7	11528440	15881943	15100050	0.132	1724.6	0	-29.0
6000	0.000404	0.000346	4724.9	5519.2	11702194	15966752	14962150	0.124	1708.8	0	-29.0
7000	0.000399	0.000365	4879.2	5337.4	12219319	14621537	14981456	0.117	1711.0	0	-29.0
8000	0.000404	0.000359	4815.8	5415.3	11926971	15081434	14981456	0.124	1711.0	0	-29.0
9000	0.000411	0.000353	4744.1	5524.8	11536025	15645445	15001452	0.131	1713.3	0	-29.0
10000	0.000399	0.000362	4860.2	5360.2	12171744	14804944	14981456	0.126	1711.0	0	-29.0
20000	0.000395	0.000344	4733.3	5430.0	11987647	15776450	14863552	0.121	1697.5	0	-29.0
30000	0.000387	0.000341	4768.9	5414.4	12310333	15868843	14902853	0.108	1702.0	0	-28.9
40000	0.000381	0.000355	4892.9	5263.0	12827458	14841488	14902853	0.106	1702.0	0	-29.0
50000	0.000372	0.000337	4815.0	5326.2	12926746	15817820	14863552	0.107	1697.5	0	-29.0
60000	0.000350	0.000337	4901.6	5096.8	13998919	15135904	14685661	0.106	1677.2	0	-29.0
70000	0.000344	0.000304	4623.0	5234.9	13432150	17223021	14429167	0.087	1647.9	0	-29.0
80000	0.000313	0.000322	4891.5	4755.7	15633034	14776675	14172673	0.086	1618.6	0	-29.0
90000	0.000341	0.000310	4640.0	5108.4	13599009	16483187	14290577	0.094	1632.1	0	-29.1
100000	0.000341	0.000320	4733.8	5042.0	13874119	15739906	14349874	0.088	1638.9	0	-28.9
145330	0.000314	0.000304	4551.1	4707.2	14476053	15486860	13599698	0.093	1553.2	0	-28.9
165730	0.000264	0.000259	4275.6	4349.4	16212903	16776225	12672321	0.079	1447.3	0	-28.9
184310	0.000232	0.000222	3972.5	4159.1	17090637	18734405	11942140	0.047	1363.8	0	-28.9
200000	0.000210	0.000204	3853.7	3966.2	18343458	19430110	11487760	0.041	1312.0	0	-28.9
231290	0.000179	0.000167	3538.6	3791.4	19791408	22719715	10757579	0.040	1228.6	0	-28.8
245220	0.000159	0.000152	3339.0	3502.7	20943563	23047227	10046705	0.030	1147.4	0	-28.7

Filename : P26474
Material : PlusRide , A-Str., Anchorage
Beam width (cm) : 5.123 Beam depth (cm) : 5.024 Bulk density (KN/m^3) : 22.79 Deflection (mm) : 0.2286

Rep	Tens strn (m/m)	Comp str (m/m)	Tens strs (KPa)	Comp strs (KPa)	Tens stiff (KPa)	Comp stiff (KPa)	Flex stiff (KPa)	Disp engy (KJ/m^3)	Max load (N)	Lag (sec)	Temp (C)
1	0.000411	0.000469	6376.2	5586.7	15505476	11903528	16030186	0.013	2022.1	0	-29.1
11	0.000396	0.000438	5975.3	5406.2	15076607	12342050	15279320	0.039	1927.4	0	-29.1
20	0.000389	0.000429	5900.3	5347.2	15172448	12461334	15100740	0.040	1904.9	0	-29.1
30	0.000392	0.000431	5859.6	5332.5	14953187	12384110	15029032	0.045	1895.9	0	-29.1
40	0.000390	0.000423	5790.4	5341.8	14833214	12624056	14957324	0.048	1886.8	0	-29.1
50	0.000393	0.000429	5775.0	5293.7	14681524	12336534	14868378	0.047	1875.6	0	-29.1
60	0.000383	0.000426	5814.5	5224.9	15184859	12261379	14814597	0.064	1868.8	0	-29.1
70	0.000383	0.000428	5825.2	5216.3	15212439	12198634	14814597	0.042	1868.8	0	-29.1
80	0.000390	0.000425	5731.7	5269.1	14682903	12408242	14778743	0.052	1864.3	0	-29.1
90	0.000377	0.000431	5874.2	5142.5	15583390	11942830	14760816	0.052	1862.1	0	-29.1
100	0.000383	0.000419	5733.1	5243.5	14972493	12524078	14742889	0.050	1859.8	0	-29.1
200	0.000387	0.000413	5635.9	5290.0	14548450	12817805	14689798	0.053	1853.0	0	-29.1
300	0.000378	0.000419	5705.6	5157.4	15075918	12317918	14582236	0.047	1839.5	0	-29.1
400	0.000381	0.000423	5706.9	5144.3	14962150	12157264	14564309	0.054	1837.3	0	-29.1
500	0.000372	0.000426	5786.4	5058.0	15534435	11869743	14528455	0.054	1832.7	0	-29.0
600	0.000389	0.000423	5614.7	5160.0	14438130	12194497	14475363	0.063	1826.0	0	-29.0
700	0.000374	0.000429	5788.4	5044.8	15477896	11756665	14511217	0.043	1830.5	0	-29.0
800	0.000380	0.000414	5620.3	5155.3	14792533	12446165	14475363	0.049	1826.0	0	-29.0
900	0.000371	0.000414	5676.9	5084.7	15301384	12275858	14439509	0.054	1821.5	0	-29.1
1000	0.000368	0.000410	5647.6	5072.5	15345512	12379973	14385728	0.051	1814.7	0	-29.0
2000	0.000350	0.000413	5648.7	4792.2	16132232	11611180	13956859	0.047	1760.6	0	-29.0
2266	0.000361	0.000395	5383.0	4915.8	14929054	12450302	13832060	0.039	1744.8	0	-29.0
3000	0.000322	0.000352	4772.3	4367.9	14828387	12422032	12277237	0.039	1548.7	0	-29.0
3541	0.000294	0.000316	4369.6	4060.4	14886305	12854349	11329864	0.035	1429.3	0	-29.0
4000	0.000295	0.000301	4117.7	4036.1	13957549	13410086	10972703	0.041	1384.1	0	-29.0
5000	0.000280	0.000295	4041.8	3837.7	14429167	13008797	10596926	0.029	1336.8	0	-29.0
5824	0.000262	0.000292	4069.6	3654.3	15519266	12513046	10365254	0.044	1307.5	0	-29.0
6000	0.000268	0.000289	3986.8	3699.0	14864931	12797120	10329400	0.033	1303.0	0	-29.0
7000	0.000268	0.000288	3921.0	3656.9	14620158	12717138	10185984	0.043	1284.9	0	-29.0
7858	0.000256	0.000282	3915.7	3563.5	15279320	12654394	10043257	0.068	1266.9	0	-29.1
8000	0.000247	0.000288	4020.3	3457.9	16254963	12024880	10007403	0.041	1262.4	0	-29.0
9000	0.000250	0.000274	3853.3	3518.2	15393777	12832974	9900531	0.041	1248.9	0	-29.0
10000	0.000261	0.000270	3714.2	3591.1	14244381	13315624	9828823	0.031	1239.9	0	-29.0
13849	0.000234	0.000261	3692.5	3312.6	15784724	12704727	9399954	0.072	1185.7	0	-29.0
16120	0.000234	0.000259	3632.4	3277.5	15527540	12641983	9275154	0.037	1170.0	0	-29.0
20000	0.000229	0.000240	3442.6	3292.9	15003520	13727256	9060030	0.034	1142.9	0	-29.0
22058	0.000223	0.000243	3428.8	3155.4	15342065	12992249	8845596	0.041	1115.9	0	-29.0
23858	0.000219	0.000231	3328.1	3156.3	15195201	13667269	8720796	0.041	1100.1	0	-29.0
23934	0.000218	0.000243	3421.6	3064.7	15728874	12619229	8702869	0.030	1097.9	0	-29.0
26943	0.000201	0.000225	3284.3	2936.2	16328050	13050856	8345708	0.046	1052.8	0	-29.1
28441	0.000203	0.000204	3071.9	3049.5	15160037	14939397	8238146	0.032	1039.3	0	-29.0
30000	0.000186	0.000192	3075.9	2980.6	16515594	15507545	8149201	0.025	1028.0	0	-29.0
30895	0.000176	0.000189	3115.4	2894.6	17719461	15297247	8077493	0.027	1019.0	0	-29.0

APPENDIX B

Test Results used in Analysis

Key to the column headings in the Tables that follow:

T = test temperature, °C

strain = initial tensile strain applied to beam, m/m

E_c = initial compressive stiffness, MPa

E_t = initial tensile stiffness, MPa

E_f = initial flexural stiffness, MPa

Phi = initial phase angle, degrees

CDE_f = cumulative dissipated energy to failure, kJ/m^3

N_f = number of load repetitions to 50% load reduction = fatigue life

Conventional Asphalt Concrete (California)

Sample	T (^oC)	strain (m/m)	E_c (MPa)	E_t (MPa)	E_f (MPa)	Phi (deg.)	CDE_f (kJ/m^3)	N_f
CI1250	31.7	1.65E-03	1022	873	962	34.2	18333	3570
CI2220	32.4	7.50E-04	690	775	921	34.2	67523	112648
CI3240	32.3	1.44E-03	1234	1028	1246	34.2	20521	4545
CI4230	32.3	8.76E-04	1716	2460	2130	28.8	8956	5156
CI5230	32.3	1.24E-03	3227	1232	2041	30.6	33527	17433
CI6218	32.4	5.84E-04	2468	2223	2503	28.8	43718	88772
CI7250	32.3	1.83E-03	967	893	1039	34.2	16684	3882
CA1400	23.3	7.65E-04	3540	3623	4453	18.0	13131	10771
CA2467	23.7	5.57E-04	2779	2772	3646	19.8	95903	171449
CC5390	23.7	1.60E-03	2803	1652	2657	21.6	3519	1108
CC2390	23.5	1.47E-03	2552	2266	2923	23.4	10102	2160
CD4390	23.3	1.58E-03	3508	2123	3316	21.6	4271	1067
CE2450	23.2	3.61E-04	3270	3197	3672	19.8	181670	700000
CD2370	22.4	1.33E-03	3658	2314	3826	18.0	7894	3500
CF2358	21.8	9.05E-04	3309	3463	4199	19.8	13586	6200
CE4365	22.8	9.05E-04	4746	3101	3674	19.8	4540	2456
CB3350	22.3	7.85E-04	6243	3499	4854	14.4	16450	9284
CA3350	-1.7	5.39E-04	13200	15479	14697	1.8	166	575
CB2470	-1.8	4.75E-04	12782	14520	17229	1.8	614	3704
CB4460	-1.7	3.47E-04	16279	14120	16158	1.8	7901	18854
CD3325	-2.3	3.33E-04	16107	13359	19813	3.6	9770	152642
CE1333	-1.4	8.43E-04	24392	13124	20024	3.6	262	157
CE3330	-1.9	4.38E-04	22127	12617	20901	3.6	4658	35350
CF1335	-2.1	5.33E-04	25128	10014	19069	3.6	731	2748
CC3335	-11.7	4.91E-04	18994	14267	18962	1.8	10	119
CC4320	-12.2	2.71E-04	17951	19154	26226	0.0	5417	868511
CB6330	-11.4	2.59E-04	22404	18008	14984	1.8	1573	70000
CF3330	-12.8	2.86E-04	18994	16325	17596	3.6	37895	638084
CF5335	-11.8	6.61E-04	17513	10513	19277	5.4	21	170
CG5325	-12.7	3.84E-04	21665	17218	27481	1.8	1573	49945
CG6327	-12.4	4.41E-04	23138	14959	25416	1.8	9	158
CG8326	-12.1	4.49E-04	21676	13919	25420	1.8	593	5560
CK4336	-29.1	3.51E-04	15152	23674	19930	0.0	2795	28702
CK5330	-28.9	3.11E-04	17325	29778	27632	0.0	83	660
CK6337	-28.9	5.55E-04	23294	14571	27314	0.0	159	3000

Asphalt-Rubber Hot Mix (California)

Sample	T (°C)	strain (m/m)	E_c (MPa)	E_t (MPa)	E_f (MPa)	Phi (deg.)	CDE_f (kJ/m^3)	N_f
RI1225	32.3	8.64E-04	720	871	946	28.8	18133	542868
RI2250	32.3	1.69E-03	727	967	1003	30.6	8163	4006
RI3240	32.3	1.64E-03	613	455	653	32.4	63549	35623
RI4235	32.3	1.46E-03	694	699	957	32.4	62645	45204
RI5230	32.3	1.12E-03	672	715	863	30.6	172162	323746
RI6255	32.3	2.36E-03	828	541	844	32.4	39454	14295
RI7255	32.3	2.22E-03	752	610	845	32.4	22287	7893
RA4350	22.9	6.91E-04	1705	2170	2291	18.0	262103	409492
RF3375	20.7	1.27E-03	2730	1754	2735	16.2	14725	9458
RB1360	20.7	7.92E-04	2356	2703	2866	14.4	48666	51795
RC3390	22.6	1.30E-03	2263	1688	2186	18.0	28842	13969
RD23100	21.7	1.46E-03	1647	1973	2244	19.8	5555	2000
RC4340	23.1	6.51E-04	1642	1546	2122	19.8	285770	494171
RA3255	21.2	2.09E-03	1477	1586	1901	23.4	3947	800
RE1245	21.0	2.11E-03	2187	1283	2187	21.6	5203	1250
RB4330	21.1	4.78E-04	2439	2297	3001	14.4	211278	790604
RE3360	22.4	8.66E-04	1913	2314	2603	16.2	191427	175751
RA1460	-2.7	5.60E-04	9349	7223	12905	5.4	15263	53587
RA2490	-1.7	7.33E-04	7670	8684	12270	5.4	12337	7552
RB34100	-2.2	9.62E-04	7840	6900	11912	7.2	5072	2000
RC1370	-2.1	8.85E-04	13557	8130	10232	3.6	2408	2675
RD1450	-1.7	3.98E-04	8529	8851	12422	3.6	111690	630830
RD3470	-1.3	5.62E-04	10155	7458	11589	3.6	9467	23349
RD4370	-1.6	7.74E-04	6994	8404	7675	3.6	269	637
RE2360	-1.5	7.24E-04	7845	12116	11164	5.4	2194	1515
RE4365	-2.0	8.58E-04	9551	10021	11379	5.4	455	855
RF1340	-12.5	5.95E-04	14541	10754	15246	3.6	504	3262
RF2320	-11.9	2.92E-04	9181	9752	12668	1.8	33776	758577
RF4330	-12.6	5.12E-04	12177	11480	17768	3.6	35852	81390
RG2332	-12.4	5.36E-04	13356	11635	18039	3.6	2553	10784
RG3333	-12.4	6.52E-04	11366	9385	16729	3.6	13455	33465
RG4334	-12.0	6.04E-04	13656	10265	17222	3.6	1111	6022
RG5335	-12.6	6.97E-04	7729	9913	15577	3.6	3581	2383
RG7325	-12.2	4.20E-04	13482	12176	19045	3.6	7638	72333
RJ6330	-28.9	3.42E-04	15464	17979	19793	0.0	29208	401945
RK2335	-29.0	5.20E-04	7945	14348	17808	1.8	14566	55129
RK3340	-29.1	5.08E-04	19402	19631	27425	0.0	504	2593
RK4337	-29.3	5.24E-04	19094	16986	25582	0.0	1615	9803
RL1337	-28.8	3.73E-04	13317	25894	22319	0.0	1373	13738
RL2336	-28.8	4.20E-04	17524	19964	22969	0.0	400	4691
RL3335	-28.9	4.91E-04	12775	15800	21759	0.0	6852	197660
RL4336	-28.8	6.42E-04	17033	11491	22977	0.0	255	1460

AC-5 Mix (Alaska)

Sample	T (°C)	strain (m/m)	E_f (MPa)	Phi (deg.)	CDE_f (kJ/m^3)	N_f
A5899A	26.7	2.63E-03	417	18.2	9391	17426
A5855A	26.7	1.35E-03	494	10.5	94185	517813
A5895A	26.7	3.08E-03	353	23.2	3581	6143
A5875A	26.7	1.96E-03	578	15.8	16167	38027
A5835A	26.7	3.14E-03	422	16.6	12972	13970
A5805A	26.7	2.95E-03	434	16.9	9888	14329
A5490A	4.4	3.20E-04	9492	26.1	14048	33470
A5410A	4.4	4.20E-04	5810	17.3	18982	34153
A5430A	4.4	5.40E-04	7766	15.4	9853	11406
A5420A	4.4	4.60E-04	9775	19.4	5575	8235
A5480A	4.4	2.90E-04	7838	23.0	65543	205379
A5475A	4.4	6.00E-04	6801	23.1	3650	5104
A5450A	4.4	5.20E-04	6899	20.1	14939	15204
B5495A	4.4	8.40E-04	6920	19.0	400	412
B5485A	4.4	3.60E-04	6608	25.1	21328	58674
B5460A	4.4	4.30E-04	5738	21.5	2312	7583
B5450A	4.4	4.10E-04	6943	21.6	7838	30209
B5435A	4.4	6.10E-04	6605	20.3	5348	5238
B5410A	4.4	9.50E-04	7044	8.1	800	764
A5290A	-6.7	3.40E-04	14285	6.8	9011	22068
A5280A	-6.7	3.10E-04	15295	7.1	6734	23840
A5275A	-6.7	2.80E-04	14714	6.6	4602	19212
A5295A	-6.7	3.50E-04	16587	7.7	1787	4741
A5265A	-6.7	2.80E-04	12455	7.4	49542	266838
A5275B	-6.7	2.80E-04	17424	7.1	9984	40960
A5290B	-6.7	3.40E-04	15642	6.5	490	1634
A5280B	-6.7	2.60E-04	19567	7.5	4727	16554
A5299B	-6.7	3.40E-04	16686	7.2	3754	8043
A5295B	-6.7	3.40E-04	16530	7.1	4457	12069
A5210A	-6.7	3.70E-04	18538	4.9	2967	6025
A5150A	-12.2	2.40E-04	14814	6.1	19976	222721
A5175A	-12.2	2.80E-04	18153	6.6	704	3958
A5165A	-12.2	2.60E-04	16421	5.3	31402	188211
A5175B	-12.2	2.50E-04	17937	6.9	10460	54017
A5185A	-12.2	4.30E-04	14493	6.5	76	279
A5190A	-12.2	2.90E-04	19673	6.1	2415	8680
A5199A	-12.2	3.20E-04	19165	10.8	683	1834
A5199B	-12.2	2.70E-04	17870	0.0	90	265
A5035A	-26.1	3.80E-04	32304	0.0	207	730
A5085A	-26.1	5.10E-04	8492	0.0	524	4397
A5015A	-26.1	3.90E-04	19938	0.0	110	300
A5080A	-26.1	2.20E-04	28571	0.0	55	242
A5070A	-26.1	3.77E-04	23262	0.0	2981	20463
A5060A	-26.1	3.33E-04	16996	0.0	524	3516
A5055A	-26.1	1.78E-04	24950	0.0	18182	173824

Asphalt-Rubber Concrete (Alaska)

Sample	T (^oC)	strain (m/m)	E_c (MPa)	E_t (MPa)	E_f (MPa)	Phi (deg.)	CDE_f (kJ/m^3)	N_f
AR14100	21.8	9.53E-04	1083	500	931	27.0	12960	429193
AR2360	21.8	9.90E-04	999	583	899	25.2	18206	281177
AR3370	21.8	1.14E-03	501	456	621	28.8	5305	169499
AR23300	22.3	1.76E-03	376	278	436	34.2	12282	8003
AR24340	22.1	6.57E-04	528	567	754	30.6	111072	542868
AR28385	21.9	1.12E-03	837	798	878	28.8	45437	79880
AR29390	21.9	1.29E-03	532	393	503	28.8	57035	86851
AR6460	-2.1	5.34E-04	8036	4994	8637	7.2	2121	19513
AR7470	-2.2	5.84E-04	4615	5683	7528	9.0	1362	4306
AR8450	-2.2	5.20E-04	3842	5250	8490	7.2	5043	19874
AR9440	-1.7	3.84E-04	6422	5511	9420	7.2	4358	77108
AR10440	-2.2	4.93E-04	3749	4659	9372	10.8	133308	294705
AR11480	-2.2	6.98E-04	7728	5935	9470	7.2	572	1362
AR4450	-2.1	2.96E-04	6459	5522	5964	9.0	4885	37613
AR5445	-2.2	2.48E-04	5455	7514	6884	9.0	1104	28730
AR12450	-11.9	3.94E-04	8106	9311	12845	3.6	675	22638
AR13440	-12.5	3.21E-04	13820	10693	17358	1.8	22669	1162030
AR14460	-12.4	5.02E-04	10978	9350	14616	3.6	48271	47579
AR15465	-12.3	5.12E-04	8962	9067	12970	3.6	30334	28289
AR17470	-12.4	6.19E-04	8256	8821	13964	5.4	246	945
AR18455	-12.4	5.91E-04	8030	6788	13573	5.4	9134	35350
AR31467	-12.7	4.63E-04	10184	8314	10511	7.2	414	3440
AR16450	-28.6	4.55E-04	12161	12401	21168	1.8	1479	153993
AR19460	-29.1	5.25E-04	13998	10245	18628	1.8	2039	339322
AR20470	-29.1	5.45E-04	9051	12551	16742	1.8	311	18116
AR21465	-28.7	4.64E-04	11103	11899	15445	1.8	4016	542868
AR22468	-28.8	8.99E-04	9534	5316	14546	3.6	2468	16768
AR26465	-29.1	4.23E-04	12817	13272	16344	1.8	1473	47579
AR30467	-29.1	4.39E-04	9962	13311	14255	1.8	3581	120679

PlusRide Mix (Alaska)

Sample	T (^oC)	strain (m/m)	E_c (MPa)	E_t (MPa)	E_f (MPa)	Phi (deg.)	CDE_f (kJ/m^3)	N_f
P12390	21.9	1.15E-03	485	610	611	27.0	8473	10771
P13370	22.3	8.67E-04	259	502	446	34.2	5003	10189
P18380	21.9	1.37E-03	1236	612	993	30.6	23798	17535
P19395	21.9	1.57E-03	402	348	480	34.2	217557	169499
P203100	22.2	1.32E-03	428	536	539	32.4	12889	9224
P21395	21.9	1.34E-03	960	1040	1208	27.0	1628	880
P22390	22.2	1.42E-03	994	342	541	32.4	28290	19638
P23250	21.9	1.92E-03	503	304	447	34.2	27800	12690
P1470	-2.6	5.18E-04	4787	7006	8270	9.0	14818	47004
P2480	-2.6	7.62E-04	6025	5317	9222	7.2	14347	25306
P3490	-2.7	7.18E-04	8233	7729	10998	9.0	12892	9630
P4460	-2.1	5.73E-04	8938	5573	10572	9.0	12339	34752
P5460	-2.1	6.91E-04	4920	3955	8571	9.0	141519	159986
P28490	-2.1	5.81E-04	9156	7544	9272	9.0	10695	12005
P29493	-1.9	7.16E-04	6464	6304	8694	7.2	6438	9685
P6470	-12.1	6.15E-04	8448	7806	12828	3.6	278	1705
P7460	-12.1	4.29E-04	12931	10458	14740	3.6	270	15046
P8455	-12.2	3.47E-04	12051	12679	15041	3.6	4822	38075
P9450	-12.2	3.41E-04	10950	12534	15198	3.6	15328	76780
P10465	-12.0	5.39E-04	12848	8076	13849	3.6	1102	18293
P27467	-12.4	4.76E-04	11377	9867	13365	7.2	7776	11365
P11465	-28.7	4.18E-04	13285	13379	16570	0.0	10765	232995
P14470	-28.6	3.96E-04	11411	16514	16136	0.0	3402	41011
P16473	-28.6	4.81E-04	12478	13826	16675	0.0	9559	145635
P17467	-29.2	4.20E-04	10518	16018	17186	0.0	2367	29882
P25470	-29.1	4.54E-04	15167	11623	16553	0.0	21273	329035
P26474	-29.1	4.11E-04	11912	15517	16042	0.0	1256	32125

APPENDIX C

Derivation of Type I Conversion

In Chapter 5, the derivation reached Equation (5.11) as shown:

$$\int_0^D \frac{(1-D')}{(\gamma-\beta D')} dD' = \int_1^N \frac{dN'}{N'} \tag{1}$$

where: $\gamma = \alpha + \beta = \text{a constant}$

$D' = \text{damage variable}$

$N' = \text{cycle variable}$

The right-hand side of equation (1) is:

$$\int_1^N \frac{dN'}{N'} = \left(\ln N'\right)_1^N = \ln N \tag{2}$$

The left-hand side of equation (1) can be written as:

$$L = \int_0^D \left(\frac{1}{\beta} + \frac{\gamma/\beta - 1}{\beta D' - \gamma}\right) dD' \tag{3}$$

or

$$L = \int_0^D \frac{dD'}{\beta} + \int_0^D \left(\frac{\gamma/\beta - 1}{\beta D' - \gamma}\right) dD' \tag{4}$$

or

$$L = \frac{D}{\beta} + (\gamma/\beta - 1) \int_0^D \frac{dD'}{\beta D' - \gamma} \tag{5}$$

Let $Y = \beta D' - \gamma \Rightarrow dY = \beta\, dD' \Rightarrow dD' = dY/\beta$

Changing the limits of integration, we have:

when $D' = 0 \Rightarrow Y = -\gamma$ and when $D' = D \Rightarrow Y = \beta D - \gamma$

Introducing the above change of variables into Equation (5) gives:

$$L = \frac{D}{\beta} + (\gamma/\beta - 1) \int_{-\gamma}^{\beta D - \gamma} \frac{dY}{\beta Y} \qquad (6)$$

or

$$L = \frac{D}{\beta} + \frac{\gamma/\beta - 1}{\beta} \ln\left(\frac{\beta D - \gamma}{-\gamma}\right) \qquad (7)$$

or

$$L = \frac{D}{\beta} + \frac{\gamma/\beta - 1}{\beta} \ln\left(1 - \frac{\beta D}{\gamma}\right) \qquad (8)$$

Since $\gamma = \alpha + \beta$, then Equation (8) becomes:

$$L = \frac{D}{\beta} + \frac{1}{\beta}\left(\frac{\alpha + \beta}{\beta} - 1\right) \ln\left(1 - \frac{\beta}{\alpha + \beta} D\right) \qquad (9)$$

or

$$L = \frac{D}{\beta} + \frac{\alpha}{\beta^2} \ln\left(1 - \frac{\beta}{\alpha + \beta} D\right) \qquad (10)$$

Equations (2) and (10) are the right-hand and left-hand sides of Equation (1), respectively. Therefore, Equation (1) reduces to:

$$\ln N = \frac{D}{\beta} + \frac{\alpha}{\beta^2} \ln\left(1 - \frac{\beta}{\alpha + \beta} D\right) \qquad (11)$$

APPENDIX D

Derivation of Type II Conversion

Equation (5.31) in Chapter 5 is given as:

$$\frac{E_0}{\ln 10}\int_0^D \frac{dD'}{G E_0 D' + \alpha} = \int_1^N dN' \tag{1}$$

where: $\alpha = -G E_0 - F\sigma = \text{a constant}$

$D' = \text{damage variable}$

$N' = \text{cycle variable}$

The right-hand side of equation (1) is:

$$\int_1^N dN' = N - 1 \tag{2}$$

For the left-hand side of Equation (1), let $X = G E_0 D' + \alpha$, then:

$$dX = G E_0 dD' \Rightarrow dD' = \frac{dX}{G E_0}$$

Changing the limits of integration, we have:

when $D' = 0 \Rightarrow X = \alpha$ and when $D' = D \Rightarrow X = GE_0 D + \alpha$

Introducing the above change of variables into (1) gives:

$$\frac{E_0}{\ln 10}\int_{\alpha}^{GE_0 D+\alpha} \frac{dX}{G E_0 X} = N - 1 \tag{3}$$

or

$$\frac{1}{G \ln 10}\left[\ln X\right]_{\alpha}^{GE_0 D+\alpha} = N - 1 \tag{4}$$

or

$$\frac{1}{G \ln 10} \ln\left(\frac{GE_0 D + \alpha}{\alpha}\right) = N - 1 \tag{5}$$

Therefore, Equation (1) reduces to:

$$N = 1 + \frac{1}{G \ln 10} \ln\left(1 + \frac{GE_0}{\alpha} D\right) \tag{6}$$

APPENDIX E

Dissipated Energy for Haversine Loading

The haversine tensile strain at the bottom of a beam in a fatigue test is given as:

$$\varepsilon(t) = \varepsilon_o \sin^2\left(\frac{\pi}{T}t\right) \tag{1}$$

where: ε_o = strain amplitude

t = time (0 < t < 0.1 sec)

T = loading period (0.1 sec)

The resulting tensile stress is given as:

$$\sigma(t) = \sigma_o \sin^2\left(\frac{\pi}{T}t + \phi\right) \tag{2}$$

where: σ_o = stress amplitude

ϕ = phase shift (or angle), degrees

Using the trigonometric identity:

$$\sin^2 \alpha = \frac{1}{2}(1 - \cos 2\alpha) \tag{3}$$

then Equations (1) and (2) can be written as:

$$\varepsilon(t) = \frac{\varepsilon_o}{2}(1 - \cos 2\omega t) \tag{4}$$

and

$$\sigma(t) = \frac{\sigma_o}{2}(1 - \cos(2\omega t + 2\phi)) \tag{5}$$

where: ω = angular frequency = π / T (rad/sec)

The dissipated energy per cycle (U) is the area within the stress-strain hysteresis loop. Mathematically, this area is given as:

$$U = \int \sigma(t) d\varepsilon \tag{6}$$

Replacing strain and stress values from equations (4) and (5) into equation (6) gives:

$$U = \int_0^\pi \frac{\sigma_o}{2}[1 - \cos 2(\omega t + \phi)] d\left[\frac{\varepsilon_o}{2}(1 - \cos 2\omega t)\right] \tag{7}$$

The limits of integration are: $t = 0$ to $t = T$ seconds, or $\omega t = 0$ to $\omega t = \pi$ radians.

$$U = \frac{\sigma_o}{2}\int_0^\pi [1 - \cos 2(\omega t + \phi)][\varepsilon_o \sin(2\omega t)] d\omega t \tag{8}$$

$$U = \frac{\sigma_o \varepsilon_o}{2}\int_0^\pi [\sin(2\omega t) - \sin(2\omega t)\cos 2(\omega t + \phi)] d\omega t \tag{9}$$

$$U = \frac{\sigma_o \varepsilon_o}{2}\int_0^\pi \{\sin(2\omega t) - \sin(2\omega t)[\cos(2\omega t)\cos 2\phi - \sin(2\omega t)\sin 2\phi]\} d\omega t \tag{10}$$

$$U = \frac{\sigma_o \varepsilon_o}{2}\int_0^\pi [\sin(2\omega t) - \sin(2\omega t)\cos(2\omega t)\cos 2\phi + \sin^2(2\omega t)\sin 2\phi] d\omega t \tag{11}$$

$$U = \frac{\sigma_o \varepsilon_o}{2}\int_0^\pi \left[\sin(2\omega t) - \frac{\sin(4\omega t)}{2}\cos 2\phi + \left(\frac{1 - \cos(4\omega t)}{2}\right)\sin 2\phi\right] d\omega t \tag{12}$$

$$U = \frac{\sigma_o \varepsilon_o}{2} \int_0^{\pi} \sin(2\omega t)\, d\omega t \; - \frac{\sigma_o \varepsilon_o}{4} \cos 2\phi \int_0^{\pi} \sin(4\omega t)\, d\omega t \; + \frac{\sigma_o \varepsilon_o}{4} \sin 2\phi \int_0^{\pi} (1 - \cos(4\omega t))\, d\omega t \tag{13}$$

$$U = \frac{-\sigma_o \varepsilon_o}{4} [\cos 2\omega t]_{\omega t=0}^{\omega t=\pi} + \frac{\sigma_o \varepsilon_o}{16} \cos 2\phi\, [\cos 4\omega t]_0^{\pi} + \frac{\sigma_o \varepsilon_o}{4} \sin 2\phi \left([\omega t]_0^{\pi} - \frac{1}{4} [\sin 4\omega t]_0^{\pi} \right) \tag{14}$$

$$U = \frac{-\sigma_o \varepsilon_o}{4} (\cos 2\pi - \cos 0) + \frac{\sigma_o \varepsilon_o}{16} \cos 2\phi\, (\cos 4\pi - \cos 0) + \frac{\sigma_o \varepsilon_o}{4} \sin 2\phi\, [(\pi - 0) - \frac{1}{4} (\sin 4\pi - \sin 0)] \tag{15}$$

$$\boxed{U = \frac{\pi}{4} \sigma_o \varepsilon_o \sin 2\phi} \tag{16}$$

and, since $\sigma_o = E_o\, \varepsilon_o$, the dissipated energy per cycle for a haversine loading pattern is given as:

$$\boxed{U = \frac{\pi}{4} E_o (\varepsilon_o)^2 \sin 2\phi} \tag{17}$$

where: E_o = mix stiffness

σ_o , ε_o = stress and strain amplitude, respectively,

ϕ = phase shift between stress and strain.

APPENDIX F

Typical Abaqus Input and Output

The following is a typical input for the ABAQUS program:

```
*HEADING
PAVEMENT RESPONSE FOR ARHM SURFACE LAYER (SPRING)
*PREPRINT,ECHO=YES,HISTORY=NO,MODEL=YES
*NODE
100,0.,0.
150,5.,0.
230,85.,0.
1100,0.,5.
1150,5.,5.
1230,85.,5.
2700,0.,17.
2750,5.,17.
2830,85.,17.
3900,0.,29.
3950,5.,29.
4030,85.,29.
4900,0.,85.
4950,5.,85.
5030,85.,85.
*NGEN,NSET=VLINE11
100,1100,200
*NGEN,NSET=VLINE12
1100,2700,200
*NGEN,NSET=VLINE13
2700,3900,200
*NGEN,NSET=VLINE14
3900,4900,200
*NGEN,NSET=VLINE21
150,1150,200
*NGEN,NSET=VLINE22
1150,2750,200
*NGEN,NSET=VLINE23
2750,3950,200
*NGEN,NSET=VLINE24
3950,4950,200
*NGEN,NSET=VLINE31
230,1230,200
*NGEN,NSET=VLINE32
1230,2830,200
*NGEN,NSET=VLINE33
2830,4030,200
*NGEN,NSET=VLINE34
4030,5030,200
*NFILL,NSET=SURF1
VLINE11,VLINE21,5,10
*NFILL,NSET=SURF1,BIAS=0.8
VLINE21,VLINE31,8,10
*NFILL,NSET=BASE
VLINE12,VLINE22,5,10
```

```
*NFILL,NSET=BASE,BIAS=0.8
VLINE22,VLINE32,8,10
*NFILL,NSET=SUBBASE
VLINE13,VLINE23,5,10
*NFILL,NSET=SUBBASE,BIAS=0.8
VLINE23,VLINE33,8,10
*NFILL,NSET=SUBGRAD
VLINE14,VLINE24,5,10
*NFILL,NSET=SUBGRAD,BIAS=0.8
VLINE24,VLINE34,8,10
*NSET,NSET=UPBASE
1100,1110,1120,1130,1140,1150,1160,1170,1180,1190,1200,1210,1220,1230
*NSET,NSET=LWBASE
2700,2710,2720,2730,2740,2750,2760,2770,2780,2790,2800,2810,2820,2830
*NSET,NSET=LWSBBAS
3900,3910,3920,3930,3940,3950,3960,3970,3980,3990,4000,4010,4020,4030
*NSET,NSET=LWSUBG
4900,4910,4920,4930,4940,4950,4960,4970,4980,4990,5000,5010,5020,5030
*NFILL,NSET=BASE,BIAS=0.92
UPBASE,LWBASE,8,200
*NFILL,NSET=SUBBASE,BIAS=0.9
LWBASE,LWSBBAS,6,200
*NFILL,NSET=SUBGRAD,BIAS=0.8
LWSBBAS,LWSUBG,5,200
*NSET,NSET=VERT1
VLINE11,1300,1500,1700,1900,2100,2300,2500,2700,2900,3100,3300,3500
3700,3900,4100,4300,4500,4700,4900
VLINE31,1430,1630,1830,2030,2230,2430,2630,2830,3030,3230,3430,3630
3830,4030,4230,4430,4630,4830,5030
*NSET,NSET=HORZ
4900,4910,4920,4930,4940,4950,4960,4970,4980,4990,5000,5010,5020,5030
*NSET,NSET=ALNODE
SURF1,BASE,SUBBASE,SUBGRAD
*ELEMENT,TYPE=CAX4
100,100,110,310,300
1100,1100,1110,1310,1300
2700,2700,2710,2910,2900
3900,3900,3910,4110,4100
*ELGEN,ELSET=SURF1
100,13,10,10,5,200,200
*ELGEN,ELSET=BASE
1100,13,10,10,8,200,200
*ELGEN,ELSET=SUBBASE
2700,13,10,10,6,200,200
*ELGEN,ELSET=SUBGRAD
3900,13,10,10,5,200,200
*ELSET,ELSET=ELOAD
100,110,120,130,140
*ELSET,ELSET=ALELEM
SURF1,BASE,SUBBASE,SUBGRAD
*ELSET,ELSET=E1
900,910
```

```
*SOLID SECTION,ELSET=SURF1,MATERIAL=AC
*MATERIAL,NAME=AC
*ELASTIC
0.8203E6,0.35
*SOLID SECTION,ELSET=BASE,MATERIAL=AG1
*MATERIAL,NAME=AG1
*ELASTIC
2.5E4,0.40
*SOLID SECTION,ELSET=SUBBASE,MATERIAL=AG2
*MATERIAL,NAME=AG2
*ELASTIC
1.5E4,0.40
*SOLID SECTION,ELSET=SUBGRAD,MATERIAL=SOIL
*MATERIAL,NAME=SOIL
*ELASTIC
2.5E3,0.45
*BOUNDARY
VERT1,1
HORZ,1,2
*STEP
*STATIC
*DLOAD
ELOAD,P1,114.6
*EL PRINT,ELSET=SURF1,FREQUENCY=1
E
EP
*RESTART,WRITE,FREQUENCY=1
*END STEP
```

The following is a typical output from the ABAQUS program:

ABAQUS VERSION 5.7-1 PAGE 1
FOR USE BY University of Alaska UNDER LICENSE FROM EPRI, INC

PAVEMENT RESPONSE FOR ARHM SURFACE LAYER (SPRING)
STEP 1 INCREMENT 1
TIME COMPLETED IN THIS STEP 0.00

STEP 1 STATIC ANALYSIS

AUTOMATIC TIME CONTROL WITH -
A SUGGESTED INITIAL TIME INCREMENT OF 1.00
AND A TOTAL TIME PERIOD OF 1.00
THE MINIMUM TIME INCREMENT ALLOWED IS 1.000E-05
THE MAXIMUM TIME INCREMENT ALLOWED IS 1.00

INCREMENT 1 SUMMARY

TIME INCREMENT COMPLETED 1.00 , FRACTION OF STEP COMPLETED 1.00
STEP TIME COMPLETED 1.00 , TOTAL TIME COMPLETED 1.00

ELEMENT OUTPUT

THE FOLLOWING TABLE IS PRINTED AT THE INTEGRATION POINTS FOR ELEMENT TYPE CAX4 AND ELSET SURF1

ELEMENT	PT	E11	E22	E33	E12
100	1	-1.8616E-04	1.1308E-04	-1.6857E-04	-5.5450E-05
100	2	-1.8500E-04	1.1192E-04	-1.6857E-04	1.1239E-05
100	3	-1.5282E-04	7.9739E-05	-1.6857E-04	-5.7772E-05
100	4	-1.5165E-04	7.8578E-05	-1.6857E-04	8.9171E-06
110	1	-1.7213E-04	1.0360E-04	-1.6439E-04	-4.4598E-05
110	2	-1.6868E-04	1.0015E-04	-1.6439E-04	1.1522E-05
110	3	-1.4407E-04	7.5542E-05	-1.6439E-04	-5.1499E-05
110	4	-1.4062E-04	7.2091E-05	-1.6439E-04	4.6207E-06
120	1	-1.5792E-04	9.4083E-05	-1.5839E-04	-5.9519E-05
120	2	-1.5612E-04	9.2283E-05	-1.5839E-04	-2.7105E-06
120	3	-1.2952E-04	6.5679E-05	-1.5839E-04	-6.3118E-05
120	4	-1.2772E-04	6.3879E-05	-1.5839E-04	-6.3098E-06
130	1	-1.3913E-04	7.8542E-05	-1.5054E-04	-6.7273E-05
130	2	-1.2953E-04	6.8943E-05	-1.5054E-04	-8.0877E-06
130	3	-1.0954E-04	4.8949E-05	-1.5054E-04	-8.6471E-05
130	4	-9.9939E-05	3.9351E-05	-1.5054E-04	-2.7285E-05
140	1	-9.6493E-05	6.5913E-05	-1.4106E-04	-1.4485E-04
140	2	-1.0949E-04	7.8908E-05	-1.4106E-04	-1.1778E-04
140	3	-8.2955E-05	5.2375E-05	-1.4106E-04	-1.1886E-04
140	4	-9.5950E-05	6.5370E-05	-1.4106E-04	-9.1787E-05
150	1	-4.8694E-05	7.9900E-05	-1.1037E-04	-5.4043E-05
150	2	-4.2752E-05	7.3958E-05	-1.1037E-04	-5.4339E-05
150	3	-4.8731E-05	7.9937E-05	-1.1037E-04	-5.6991E-05

150	4	-4.2789E-05	7.3995E-05	-1.1037E-04	-5.7287E-05
300	1	-8.0848E-05	1.1056E-05	-6.8339E-05	-6.5306E-05
300	2	-8.0536E-05	1.0745E-05	-6.8339E-05	-1.6256E-05
300	3	-5.6323E-05	-1.3469E-05	-6.8339E-05	-6.5929E-05
300	4	-5.6011E-05	-1.3780E-05	-6.8339E-05	-1.6879E-05
310	1	-7.7311E-05	1.0127E-05	-6.7180E-05	-8.7317E-05
310	2	-7.7045E-05	9.8615E-06	-6.7180E-05	-3.8153E-05
310	3	-5.2729E-05	-1.4455E-05	-6.7180E-05	-8.7847E-05
310	4	-5.2463E-05	-1.4720E-05	-6.7180E-05	-3.8684E-05
320	1	-6.7927E-05	4.0499E-06	-6.4257E-05	-1.1398E-04
320	2	-6.4537E-05	6.5939E-07	-6.4257E-05	-6.9366E-05
320	3	-4.5620E-05	-1.8257E-05	-6.4257E-05	-1.2076E-04
320	4	-4.2229E-05	-2.1648E-05	-6.4257E-05	-7.6147E-05
330	1	-4.8929E-05	-4.0654E-06	-5.9910E-05	-1.6656E-04
330	2	-5.1509E-05	-1.4853E-06	-5.9910E-05	-1.3806E-04
330	3	-3.4679E-05	-1.8316E-05	-5.9910E-05	-1.6140E-04
330	4	-3.7259E-05	-1.5736E-05	-5.9910E-05	-1.3290E-04
340	1	-5.1005E-05	1.3997E-05	-5.6898E-05	-2.1877E-04
340	2	-6.1053E-05	2.4045E-05	-5.6898E-05	-1.9144E-04
340	3	-3.7338E-05	3.3027E-07	-5.6898E-05	-1.9867E-04
340	4	-4.7386E-05	1.0378E-05	-5.6898E-05	-1.7134E-04
350	1	-3.6127E-05	3.6997E-05	-5.0207E-05	-1.5689E-04
350	2	-3.9837E-05	4.0706E-05	-5.0207E-05	-1.1092E-04
350	3	-3.0427E-05	3.1297E-05	-5.0207E-05	-1.5505E-04
350	4	-3.4137E-05	3.5006E-05	-5.0207E-05	-1.0908E-04
500	1	1.3542E-06	-5.6374E-05	1.2069E-05	-6.7862E-05
500	2	1.0569E-06	-5.6077E-05	1.2069E-05	-2.4065E-05
500	3	2.3253E-05	-7.8273E-05	1.2069E-05	-6.7268E-05
500	4	2.2956E-05	-7.7975E-05	1.2069E-05	-2.3470E-05
510	1	2.6571E-06	-5.7431E-05	1.2513E-05	-1.0060E-04
510	2	3.4004E-06	-5.8174E-05	1.2513E-05	-5.9388E-05
510	3	2.3261E-05	-7.8035E-05	1.2513E-05	-1.0208E-04
510	4	2.4004E-05	-7.8778E-05	1.2513E-05	-6.0875E-05
520	1	6.5255E-06	-5.8095E-05	1.3049E-05	-1.4817E-04
520	2	4.6593E-06	-5.6229E-05	1.3049E-05	-1.1290E-04
520	3	2.4163E-05	-7.5732E-05	1.3049E-05	-1.4444E-04
520	4	2.2296E-05	-7.3866E-05	1.3049E-05	-1.0917E-04
530	1	2.6606E-06	-4.9143E-05	1.2444E-05	-1.9442E-04
530	2	-2.1972E-06	-4.4285E-05	1.2444E-05	-1.6431E-04
530	3	1.7716E-05	-6.4198E-05	1.2444E-05	-1.8471E-04
530	4	1.2858E-05	-5.9341E-05	1.2444E-05	-1.5460E-04
540	1	-5.9221E-06	-3.0786E-05	1.0192E-05	-2.2291E-04
540	2	-1.2750E-05	-2.3958E-05	1.0192E-05	-1.9647E-04
540	3	7.3010E-06	-4.4009E-05	1.0192E-05	-2.0926E-04
540	4	4.7367E-07	-3.7182E-05	1.0192E-05	-1.8281E-04
550	1	-1.1213E-05	-6.1210E-06	2.5014E-06	-1.8636E-04
550	2	-2.0885E-05	3.5513E-06	2.5014E-06	-1.2932E-04
550	3	-4.1387E-06	-1.3195E-05	2.5014E-06	-1.8157E-04
550	4	-1.3811E-05	-3.5228E-06	2.5014E-06	-1.2452E-04
700	1	7.6984E-05	-1.1552E-04	8.8806E-05	-6.7254E-05
700	2	7.7769E-05	-1.1630E-04	8.8806E-05	-2.2444E-05
700	3	9.9389E-05	-1.3792E-04	8.8806E-05	-6.8824E-05

700	4	1.0017E-04	-1.3871E-04	8.8806E-05	-2.4014E-05
710	1	7.6401E-05	-1.1565E-04	8.7977E-05	-9.9202E-05
710	2	7.5010E-05	-1.1426E-04	8.7977E-05	-5.6211E-05
710	3	9.7897E-05	-1.3715E-04	8.7977E-05	-9.6419E-05
710	4	9.6505E-05	-1.3575E-04	8.7977E-05	-5.3429E-05
720	1	6.9578E-05	-1.1042E-04	8.5534E-05	-1.3533E-04
720	2	6.6784E-05	-1.0762E-04	8.5534E-05	-9.7725E-05
720	3	8.8383E-05	-1.2922E-04	8.5534E-05	-1.2974E-04
720	4	8.5588E-05	-1.2643E-04	8.5534E-05	-9.2135E-05
730	1	5.8117E-05	-9.7186E-05	8.1195E-05	-1.6616E-04
730	2	5.1831E-05	-9.0900E-05	8.1195E-05	-1.3194E-04
730	3	7.5226E-05	-1.1429E-04	8.1195E-05	-1.5359E-04
730	4	6.8939E-05	-1.0801E-04	8.1195E-05	-1.1937E-04
740	1	3.9538E-05	-7.7388E-05	7.4931E-05	-1.8368E-04
740	2	3.3208E-05	-7.1058E-05	7.4931E-05	-1.5736E-04
740	3	5.2695E-05	-9.0545E-05	7.4931E-05	-1.7102E-04
740	4	4.6365E-05	-8.4215E-05	7.4931E-05	-1.4470E-04
750	1	1.5175E-05	-4.8122E-05	5.4014E-05	-1.6329E-04
750	2	9.6129E-07	-3.3908E-05	5.4014E-05	-1.1126E-04
750	3	2.1629E-05	-5.4576E-05	5.4014E-05	-1.5624E-04
750	4	7.4146E-06	-4.0362E-05	5.4014E-05	-1.0421E-04
900	1	1.6762E-04	-1.9732E-04	1.8110E-04	-6.1374E-05
900	2	1.6514E-04	-1.9484E-04	1.8110E-04	3.9091E-07
900	3	1.9850E-04	-2.2821E-04	1.8110E-04	-5.6402E-05
900	4	1.9602E-04	-2.2572E-04	1.8110E-04	5.3623E-06
910	1	1.5623E-04	-1.9126E-04	1.7635E-04	-6.1168E-05
910	2	1.5308E-04	-1.8812E-04	1.7635E-04	-1.1166E-05
910	3	1.8123E-04	-2.1626E-04	1.7635E-04	-5.4886E-05
910	4	1.7809E-04	-2.1312E-04	1.7635E-04	-4.8834E-06
920	1	1.4064E-04	-1.7864E-04	1.6892E-04	-7.9491E-05
920	2	1.3502E-04	-1.7302E-04	1.6892E-04	-3.4825E-05
920	3	1.6297E-04	-2.0097E-04	1.6892E-04	-6.8257E-05
920	4	1.5736E-04	-1.9536E-04	1.6892E-04	-2.3590E-05
930	1	1.1866E-04	-1.6195E-04	1.5980E-04	-9.0444E-05
930	2	1.1374E-04	-1.5702E-04	1.5980E-04	-5.2955E-05
930	3	1.3741E-04	-1.8069E-04	1.5980E-04	-8.0589E-05
930	4	1.3248E-04	-1.7576E-04	1.5980E-04	-4.3100E-05
940	1	9.3208E-05	-1.3654E-04	1.4881E-04	-9.5107E-05
940	2	8.1037E-05	-1.2436E-04	1.4881E-04	-6.0701E-05
940	3	1.1041E-04	-1.5374E-04	1.4881E-04	-7.0763E-05
940	4	9.8239E-05	-1.4157E-04	1.4881E-04	-3.6358E-05
950	1	3.7151E-05	-9.0612E-05	1.1011E-04	-8.5313E-05
950	2	1.7389E-05	-7.0849E-05	1.1011E-04	-5.6926E-05
950	3	4.0671E-05	-9.4132E-05	1.1011E-04	-7.5510E-05
950	4	2.0909E-05	-7.4370E-05	1.1011E-04	-4.7122E-05

MAXIMUM	1.9850E-04	1.1308E-04	1.8110E-04	2.0883E-05
ELEMENT	900	100	900	180
MINIMUM	-1.8616E-04	-2.2821E-04	-1.6857E-04	-2.2291E-04
ELEMENT	100	900	100	540